SPEECH AND LANGUAGE DISORDER SURVEY AMONG ADULTS IN CHRISTCHURCH

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'MAN CAN DO, THROUGH SPEECH AND LANGUAGE WHAT ANIMALS CANNOT. HE CAN LEAVE A RESIDUE FROM WHICH OTHERS OF HIS SPECIES CAN PROFIT.'

(Charles Van Riper, 1971)

ABSTRACT

A survey to establish the incidence of speech/language disorders and the 'need' for appropriate speech/language therapy services among nine adult sub-populations in metropolitan Christchurch was undertaken between June 1977 to November 1977.

In a series of four studies, a total of 8,371 adults were screened for identifiable speech/language disorders at the following locations: Study 1 - patients in three public hospitals; Study 2 - patients seen by a sample of general practitioners and an ENT specialist; Study 3 - clients in contact with four different social agencies, residents in a geriatric home, and male prisoners; Study 4 - participants of a suburban community centre, employees of a clothing factory, and respondents to a newspaper advertisement. A fifth study (Study 5) examined the characteristics and needs of past and present clients of a Stutterers' Clinic.

Incidence rates varied from 0.4 per cent to over 30 per cent according to the sub-population examined. The overall incidence was 2.6 per cent. In general, the older the sub-population the higher the incidence of disorders, and stutterers were evident in most of the sub-populations screened.

It was concluded that many speech impaired adults in the Christchurch metopolitan area receive no treatment for their speech problems. It seems clear that while there are insufficient speech/language therapists to treat all the

speech impaired adults who would like to receive therapy, the solution to the problem is more complex than simply increasing the number of speech/language therapists. The current situation appears to be not merely a lack of service but a general paucity of information about the types of disorders and the services available. The dissemination of such knowledge to professionals, especially doctors, as well as the general public and the speech impaired adults themselves seems to be just as important as an increase in staffing. Moreover, the location of future speech/language therapy services should be carefully considered with special regard for the 'needs' of the population it will serve.

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CONTENTS

CHAPTER Page

LIST OF TABLES

CHAPTER 1

INTRODUCTION

Many authorities have emphasized that data on the incidence/prevalence of specific speech/language disorders in a particular population is of considerable value for those involved in planning and implementing speech/language remediation programmes within that population (e.g. Department of Education Report, 1978; Milisen, 1971; Quirk, 1972). Indeed such data would seem to be an important prerequisite for attempts to provide services which cater adequately for a particular community, and are essential if provision is to be made (as it should be) to examine the effectiveness of the provisions in terms of the subsequent community adjustment of service graduates.

While a number of studies have been made in a variety of Western countries of the incidence/prevalence of speech/language disorders of children, few if any studies have been undertaken with adults. Prior to, and in the early part of the 20th Century, persons with serious types of abnormality (mental retardation, hearing loss, speech/language disorders etc.) were generally kept hidden from society in most Western countries (Van Riper, 1971). A variety of factors including the advent of universal and compulsory education led to change in such practices, but speech/language remediation services for children and adults have been established only in the last fifty years. It seems probable

that speech/language services for children emerged in much the same way as schools for deaf, special classes for mentally retarded etc. (i.e. in response to an immediate 'need' - teachers could not cope with the special needs of such pupils). The primary impetus for services with adults was probably the tragic aftermath of World War I (Eldridge, 1968; Van Riper, 1971), where large numbers of surviving but badly injured servicemen returned with CNS damage, laryngeal and facial wounds. The speech/language remediation services which developed seem to have been in direct response to an immediate and very obvious and widespread 'need'. As a result of mass media coverage, the rationale that returned servicemen deserve every effort to rehabilitate them appeared to be widely accepted (Van Riper, 1971). It is possible only to speculate on the reasons why New Zealand has not until recently been more aware of the 'need' for speech/language therapy services for adults. During the last decade there have been numerous approaches to the Education Department from the New Zealand Speech Therapists Association (Department of Education Report, 1978; Seabrook, 1972) to upgrade the training of speech/language therapists to the point that New Zealand qualifications would be recognised in other Western countries (e.g. Australia, Britain, Canada, and the United States) as qualitatively equivalent to the training provided in those countries. While much of the pressure for improved training and extension of services has apparently come from members of the New Zealand Speech Therapists' Association, the reasons for such pressures are not clear. These reasons probably derive in large part from the increased opportunities that

have occurred in recent years for New Zealanders to travel overseas. As a result of such travel many New Zealand speech/language therapists have worked in other countries and in some cases have undertaken further training overseas. Conversely, an apparently increasing number of speech/language therapists have worked in New Zealand. The interchange of personnel and ideas has probably led many New Zealand therapists to question the depth of their training and the appropriateness, diversity and extent of services. Such questioning was strikingly illustrated when Mrs Stratford (Senior Lecturer in charge of speech therapy training) criticized publically the narrow focus of existing training provisions (Education Department Report, 1978) and resigned her post reportedly as a consequence of frustrations encountered in attempting to widen the scope of training provisions. It seems likely that her actions and comments had a catalytic influence (at least) on the setting up of a Working Party to examine the current situation. In 1978, the recommendations of the Working Party were published. Some emphasis was placed on the task of clarifying the 'real need' for speech/language therapists to work with adults. A suggestion was made that a series of surveys in different geographical regions of New Zealand was necessary in order to establish how many speech/language therapists would be required to work with adult clients. At present no information is available on the 'real need' for such services. The New Zealand Health Department have endeavoured to estimate the number of speech/language therapists required in the Health Service, but the estimates were based primarily upon prevalence data on particular medical conditions.

Clearly, a service for adults which is planned and designed without reference to the actual type and severity of speech/language disorders people actually have, will be most unlikely to result in an efficient or effective use of available resources (both in terms of personnel and facilities).

Overseas figures (e.g. NINDS, 1972) indicate that approximately ten per cent of the general population have communication problems of noteworthy proportion and that such problems are due to a variety of factors (physical and psychological). It is well known for example that one of the possible consequences of a cerebral vascular accident ('stroke') is impaired communication. The American Speech and Hearing Association (Perrin, 1977) has estimated that approximately 20 per cent of 'stroke' patients develop impaired communication as a result of their 'strokes'. If the percentage requiring speech/language therapy is estimated merely on the basis of the percentage of the 'stroke' population likely to survive (Health Department Report, 1975; Quirk, 1972) such estimates will almost certainly vary considerably from the actual incidence figure and will probably be grossly misleading as a basis for the provision of services. Clearly, it is preferable that a series of local surveys of speech/language disorders in adult populations are carried out as soon as possible.

The effectiveness of therapy seems to be related to a number of variables; e.g. age, severity of disorder, intelligence, personality, motivation, time elapsed since the onset of the 'stroke' (Eisensen, 1949; Darley, 1977; Sands, Sarno and Shankweiler, 1969; Smith, 1971; Walker,

Williams and Dell, 1976; Wepman, 1951). Consequently, if the majority of 'stroke' victims with speech/language impairment are geriatric patients with severe impairment, the type of service required would differ considerably from that needed, for example, by persons with only mild impairment in the 40-50 age group. Even when aetiology of a disorder is the same in two adults, the type and extent of the remediable speech/language disorder could be very different and such variability needs to be considered when plans are being made for future services and location of facilities. The situation of patients with severe language impairments provides a useful illustration of this point. Such persons, if not mobile, would probably require the speech/language therapist to visit them (i.e. to be itinerant), whereas the more mobile and less affected patients would probably be able to transport themselves to the speech/language therapist, who need not necessarily be located in a public hospital, but could well be part of a team working in a community centre of health centre in the suburbs. If there are numerous adults in the community requiring rehabilitation with regard to communication, the facilities could include group work in addition to individual therapy. In other words, services for speech/language impaired adults should be related to their specific 'needs'. It thus seems important to have knowledge of the prevalence of the speech/language disabled especially in relation to factors such as age, type and severity of disorder.

The discussion up to this point has focussed upon only one aspect of speech/language impairment with adults -

that due to cerebral vascular accident. It needs to be noted that within the four broad disorders (Speech, Language, Voice and Rhythm), there are a multiplicity of interrelated facrors which could determine in part the mode of therapy necessary for the rehabilitation of a client (age, motivation, severity of impairment, intelligence and personality) (which need to be considered when planning treatment facilities. Another example of the inadequacy of relying exclusively on medical data for estimating the future requirements of a speech/language therapy service is evident with regard to disorders of Voice. There has been a tendency to estimate the 'need' for speech/language therapists for persons with Voice disorders, simply on the basis of the frequency of laryngectomies performed in one year (Health Department Report, 1975; Quirk, 1972). It must be stressed, however, that a laryngectomy yields only one type of case for the speech/language therapists dealing with disorders of Voice, and one which perhaps could have been avoided if preventive speech therapy had been available earlier (Brodnitz, 1958; Cooper, 1971; Gabriel and Jones, 1960). In other words, information about adults suffering from vocal strain and abuse may be more relevant to the future planning of facilities than the number of laryngectomies performed in a particular year. The latter type of information is all that is apparently available at present and it is clear that such frequency counts of medical conditions are insufficient. It seems clear that descriptive data on speech/language impaired adult population is an important first step in the development of specialist services for such adults.

Finally, there is one group of speech impaired adults viz. those who do not appear to be affected by any specific medical condition and consequently for the most part their 'needs' are largely ignored when estimates about incidence are being made (Health Department Report, 1975). Therefore, any information about the incidence of stuttering in various adult populations would be of value.

In summary, the necessity to gather data prior to the development of services has been emphasized by many authorities, but to date there is a paucity of data on the extent of speech/language disorders in New Zealand adults and to date no comprehensive overseas studies in this area have yet been published. The present study represents an initial attempt to investigate the nature and extent of speech/language impairment among specific adult populations in a typical New Zealand city (Christchurch).

CHAPTER 2

REVIEW OF LITERATURE

ROLE OF SPEECH/LANGUAGE IN SOCIAL INTERACTION

According to Van Riper (1972), normal speech/language is the membership card which signifies that is owner belongs to the human race. In general, people take for granted and expect children to develop adequate verbal communication, and it is typically only when such communication fails to emerge at the appropriate level that serious thought is given to how language is acquired. Human communication is a highly complex process which involves sensory input which is received by the organism; associational mechanisms which elaborate and give meaning to the sensory input and the motor output or response (Perkins, 1978). There are two basic modes of human communication - non verbal and verbal. Facility with non-verbal communication which involves interaction between two persons by means of eye contact, smiles, touch and gesture (Ainsworth, 1974; Bowlby, 1971; Woodward, 1971) seems to be a necessary prerequisite for the development of verbal communication skills (e.g. children reared in isolation fail to develop normal speech/ language (Bruner, 1977; Nash, 1970; Schmidt, 1973). It seems clear that these behaviours are heavily implicated in the development of attachment between the infant and its caretaker, and at the same time they appear to provide a foundation for subsequent speech/language development as

well as cognitive growth (Piaget, 1926; Vygotsky, 1962). However, while non-verbal communication is important, it is not sufficient for normal growth and development, and competency with verbal communication is required in most if not all cultures.

The apparently casual acquisition of verbal communication skills by the young child is indeed remarkable and still little understood (McNeil, 1970; Menyuk, 1971). It is clear that in order to develop and sustain normal speech/language a person requires an adequately functioning brain, reasonably normal speech organs (lungs, diaphragm, larynx, vocal cords, lips, tongue etc.), as well as motivation to interact with others. Moreover, if serious difficulties occur in cognitive, physical or psychological areas of development, communication patterns would probably be disturbed and speech/language disorders could well result.

Abnormal speech/language is likely to be a serious handicap, in that persons with communication problems are frequently penalised and rejected by others. The fact that children with poor speech/language are frequently teased and excluded from positive social interaction with their peers is documented by Perkins (1977, 1978) and Van Riper (1972). Moreover, such children have also to cope with the frustration of not being understood. Similarly, adults with speech/language problems are often avoided by others because of embarrassment arising from a lack of understanding and appreciation of their disorders (Perkins, 1978). Historically (Eldridge, 1968; Van Riper, 1972), Western societies have a poor record with regard to the acceptance of most kinds of deviance from the norm, whether they be

physical (e.g. deafness), intellectual (e.g. mental retardation), or psychological (e.g. neurosis or psychosis). Unfortunately, the person with a communication problem may have difficulties arising from all three aspects. An adult who has sustained a cerebral vascular accident may be paralysed on one side of the body (i.e. physical impairment); suffer from Aphasia and be unable to retrieve common words from memory (i.e. cognitive impairment) and be depressed because of lowered physical competency, diminished economic potential, and problems relating to interpersonal relationships - all of which are influenced adversely by their reduced ability to communicate. The salesman, the executive, the bank teller, the farmer or the labourer who yesterday regarded speech/language as indispensable could today be speechless because of a 'stroke' or a laryngectomy and thus face a multiplicity of additional problems. Such persons are often totally unprepared for the loss or impairment of what is after all a basic component of normal living (Van Riper, 1972) - i.e. the ability to communicate verbally. It is apparently not uncommon for such persons to be treated as children, or as stupid by family and friends (Ritchie, 1960). It thus seems clear that many adult persons who experience difficulties with speech/language suffer not only from the medical condition (e.g. cerebral vascular disease, cancer, disease of the CNS etc.) but from an array of concomitant problems which require the skill and knowledge of professionals trained to deal effectively with them, namely speech/language therapists.

BRIEF HISTORY OF SPEECH/LANGUAGE THERAPY

While professional speech therapy services have been available only since the early 1920s (Eldridge, 1968), it is no exaggeration to say that speech/language disorders per se are as old as recorded history. The hieroglyphics of ancient Egypt, for example, depict two very obvious speech disorders - persons with cleft palates and stutterers. Unfortunately, it is not possible to ascertain the incidence of such conditions in antiquity nor whether any form of therapy was attempted. Contemporary speech/language therapy, however, has its roots in Europe where serious academic interest was initiated by the medical profession. Not surprisingly, the disorders which presented very clear problems and/or appeared to have some physiological etiology (e.g. cleft palates, hearing loss, aphasia and stuttering) were the first to be studied.

The value of speech/language therapy for adults became evident during and after World War 1. Servicemen suffered injuries to the physical organs of speech (larynx, tongue, lips etc.) and required plastic surgery. Dr Gillies, an early pioneer in this specialized work, was responsible for the development of speech therapy for his patients. Many men sustained traumatic head injuries which resulted in impaired language function (aphasia), and researchers (e.g. Head, 1926) undertook careful observation and classification of speech symptoms associated with such cerebral disorders. The data which Head and others collected has undoubtedly been invaluable for subsequent work in speech pathology. According to Eldridge (1968) it

was not only the physical injuries of the war which precipitated increased incidence of speech/language disorders among adults, but also the psychological effects of increased stress and tension which resulted in more adults stuttering and developing voice disorders. Thus the catastrophic events of the war in Europe produced an increased 'need' for speech therapy services. The whole rehabilitation movement gained considerable impetus from the war, "nothing was too good for the wounded servicemen" (Van Riper, 1971, p.12). In general, in Europe the impetus for the first speech/language therapy services was provided by the medical profession. Clearly the types of speech/language disorders which enlisted the interest of medical practitioners were those with an organic basis which clearly were likely to extend throughout a patient's life (i.e. the disorders tended to be regarded as medical problems).

It was probably not until the introduction of free elementary education for all children regardless of their family socio-economic circumstances that speech/language disorders were viewed as educational problems. Public school teachers were suddenly required to cope with large numbers of children, many of whom were handicapped in some way. This led subsequently to the establishment of special educational services for children with special needs, and special schools or classes were soon established to teach children with communication problems (Eldridge, 1968). During the post-war era, some of the personnel who had been working with adults having speech impairment (e.g. Emil Froeschels) became involved in the training of specialist teachers to work with these speech impaired children.

The Viennese School of Logopaedics was established during this period. This school produced many well known speech/language pathologists who subsequently migrated to England and the United States, where their talents enriched the field of speech/language therapy and probably provided a tradition of concern for both speech impaired adults and children in those countries. In 1924, the Association of Logopaedics and Phoniatrics held its first congress in Vienna. Eight countries were represented by over sixty delegates including professors of medicine, psychology phonetics, and education. Thus from a combination of the knowledge and interests of several disciplines the profession of speech/language therapy began. It seems fortunate that in Europe the professions of medicine and education sponsored the inauguration of speech/language therapy. This combination of orientations seems to have been ideal since the role of an effective speech/language therapist requires knowledge from both fields. Overseas speech/language therapists have a thorough background in the physical sciences as well as adequate information about cognitive development (e.g. learning and teaching skills). The European tradition of combining expertise from all relevant disciplines was disseminated to Britain and the United States, but in New Zealand speech therapy evolved exclusively as a branch of the education service.

SPEECH/LANGUAGE THERAPY IN NEW ZEALAND

New Zealand is geographically isolated from Europe, and improved communications and contact through mass media

and economical air travel are relatively recent developments. The relative isolation of New Zealand seems to have had an effect upon the orientation and development of its speech/language therapy services. Compulsory education was implemented quite early in New Zealand's history, and the attendant problems were thus soon evident and special educational services soon established. A number of children arrived at school handicapped because of some communication deficit (e.g. hearing loss, stutter, or unintelligible speech because of a cleft palate). A special school for children with a hearing loss was established in Christchurch by Van Asch, a Dutchman recruited for the job in London (Eldridge, 1968). Mr J.E. Stevens succeeded Van Asch at Sumner, and while on an overseas trip he observed special classes for children with speech/language problems. On his return to New Zealand he set up such a class within Sumner school and advocated that similar classes be established in the other three main centres. The classes were responsible for the pupil's entire education and were staffed by teachers of the deaf. In Christchurch, speech impaired children attended the school for deaf at Sumner until 1930 when Miss Marion Saunders opened a speech class at the Normal school at Cramner Square. Caughley (1970) recalls the difficulty of attempting to educate the members of the speech class and provide help with their speech/language problems and deal with less serious cases which arrived at the class throughout the day. These early therapists relied heavily upon books to assist them with the necessary specialized knowledge.

In 1939, children with speech/language disorders were

returned to the mainstream of education and visited the clinic only for specific speech/language therapy sessions. The Education Department and the Hard of Hearing League joined in 1940-41 and provided a course for four post graduate teachers to train as speech therapists. On graduation these persons were employed to work with children who had speech/language disorders and adults with hearing problems. Under the direction of Miss Marion Saunders, the Education Department introduced a training scheme at Christchurch Teachers College in 1942. The speech/language therapy students who undertook the third year specializing in speech/language therapy were selected from post graduate teachers college students. The syllabus for the course was based upon the recommendations made by the Association of Speech Therapists in London. In 1946, the New Zealand Speech Therapists Association (NZSTA) was formed and their journal first published. By 1950, the Association had adopted a policy and rules. One of the aims of the Association is "to advance the work of speech therapy for for children and adults in New Zealand". However, it was not until 1967 that the proportion of time spent in teacher training and specialist training was reversed and official provision was made for some training with adult clients (Seabrook, 1972). The initial identification of speech/language therapy with teaching and schools has probably had a somewhat negative effect on the attitude of the medical profession towards speech/language therapy. Unlike their overseas colleagues, the medical personnel in New Zealand have not been an integral part of its development and therefore are "possibly unaware of the scope and type of

work that speech/language therapists engage in" (Working Party Report, 1978, p. 29).

In other countries the 'need' for speech/language therapists to work with adults seems to have been evident right from the very beginning of interest in persons with impaired speech. But in New Zealand this development has occurred much later. This phenomenon perhaps could be explained in terms of New Zealand's isolation, both physically and psychologically from technologically and economically more advanced countries. In the brief historical survey of the development of speech language therapy in Europe, it was pointed out that the physical and psychological traumas of the two World Wars provided the medical profession with patients who required treatment for their impaired speech/language immediately, and doctors like Froeschels, Goldstein and Gillies rose to the occasion and became intimately involved with speech/language rehabilitation both theoretically and clinically. Secondly, Eldridge (1968) mentioned that the increased stress and tension present in war time seemed to increase the incidence of stuttering and vocal disorders, and probably cerebral vascular accidents as well. Conversely, the New Zealand life style has been described as predominately rural until the sixties (Garrett, 1970). It seemed to be relatively free from the stresses and tensions evident in a modern technological society. The United States of America, Britain, Europe, Canada, and even Australia were probably much more advanced technologically than New Zealand. These countries produced and consumed more material goods than New Zealand. While a higher standard of living is

undoubtedly advantageous from some points of view, it has its negative aspects (e.g. more cars and consequently more road accidents, more noise and stress, more pollution, more smoking and drinking of alcohol). It is possible that as New Zealand has advanced industrially, that one of the negative consequences has been increased medical conditions relating to the incidence of speech/language disorders among adults. In other words there are more cases requiring speech/language services. Finally, the incidence of some medical conditions which may have concomitant communications (e.g. cerebral vascular accident) increases as a function of age (Health Department Report, 1975). Therefore, as the proportion of older persons in the population has increased (Douglas, 1973) and will continue to increase, the incidence of speech impaired adults has also increased.

Clearly, the present situation is that New Zealand children with speech/language impairment are serviced by a total of 147 Education Board Clinics located throughout the country, with a ratio of approximately one therapist to 3400 children (Working Party Report, 1978). It should be noted that this ratio is better than that suggested by the Quirk Report (1972), in fact the Education Department has developed speech therapy as an integral part of its special education programme for handicapped children. Probably one of the consequences of this close relationship with the Education Department has been the apparent neglect of the adult speech impaired population. Currently there are only eight full-time speech/language therapists and sixteen part-time clinics in the Health Service (1977) to serve the ever increasing proportion of the population which is older and

therefore more likely to require the services of a speech/language therapist.

In order to discuss the future training and education of speech/language therapy students, a working party was set up under the chairmanship of Professor D.M. McKerracher (Otago University). The Report which emerged from this working party was presented to the Minister of Education in December 1976 and has subsequently been published (NZOE, 1978). Of the many recommendations made in this report, four seem to be of particular interest in the present context:

(1) that an Advisory Council for speech/language therapy be established by the Minister of Education in consultation with the Minister of Health to determine policies which will ensure that qualified speech therapists are competent to serve in both the health and education services;

(2) that speech therapy be recognised as an independent profession with its own academic discipline and with no demand for concurrent teacher training;

(3) that the title of the profession be altered to: Speech and Language Therapy;

(4) that the number of training programmes be increased to two, one in the North Island and one in the South.

To date (February 1979) none of these recommendations has been implemented. Inherent in the report was concern for the future of the profession especially with regard to the treatment of adults. It also recognised the necessity for greater involvement by the medical profession, both at a training and clinical level, so that speech/language

therapists and the medical profession could develop an understanding of their interdependent roles in the rehabilitation of speech/language impaired persons. Good public relations from both sides could break down the artificial barriers which appear to have developed in New Zealand. Seabrook (1972) argues that Speech Therapy 'has a kinship' with medicine and education, and therefore should be closely associated with both professions. While the Education Service has provided a service for children, the clinical problems encountered in school clinics 'have a much wider reference than the educative aspects alone'.

Thus the current consensus of opinion would seem to support an extension of speech/language therapy services to include all those speech impaired adults who would like to receive some appropriate professional help with their problem. The questions to be answered are, who are these speech impaired adults, what are their problems, and what kinds of facilities would be suitable?

RESEARCH AND SPEECH/LANGUAGE THRAPY

The brevity of the history of speech/language therapy, as well as the multi-faceted nature of that history, appears to have had some restricting consequences on the profession as a whole. Firstly, treatment programmes have evolved from diverse orientations, usually as a consequence of the personnel involved rather than from any particular theoretical framework. This was due in part to the paucity of knowledge about the development of normal speech/language. Consequently, early workers were forced to define

subjectively the four main types of speech/language disorders. This made any comparison between the findings of such personnel very difficult. This lack of basic definitive data pertaining to the types of disorders has led to the present situation where research upon accountability or effectiveness of therapy procedures is still in its infancy. Clearly it is necessary to define the field by means of accurate descriptive data about the four main types of speech/language disorders before surveys can estimate reliably the incidence and prevalence of such disorders, or more sophisticated research projects can be implemented. The current status of knowledge about the four main types of speech/language disorders will be examined briefly in relation to the general understanding of the processes involved, the prevalence and incidence and the effectiveness of therapy. All this information is necessary if future services are to provide an adequate therapy programme for the speech impaired adults who require it.

The first type of disorder to be discussed, is a disorder of Speech. It may be defined as an imperfection of verbal production (i.e. articulation). According to NINDS (1970) these types of disorders may be grouped under four headings: (1) those due to central nervous system pathology (e.g. cerebral palsy, multiple sclerosis and Parkinsons's disease); (2) those due to aberrations in the peripheral structures involved in the production of speech (e.g. cleft palate, abnormality of the teeth etc.); (3) those resulting from inappropriate learning experiences; and (4) those resulting from functional disruptions arising from other causes (e.g. a lisp is retained because of a psychological

need).

It is very difficult to obtain reliable incidence figures for any type of speech/language impairment, because of such factors as definition (i.e. what actually is a speech deviation), problems with measurement (often subjectively evaluated by the observer only) and differences in the populations measured. The difficulties with such research are evident from the results of incident surveys which have yielded estimates ranging from 4-30 per cent (Milisen, 1971; NINDS, 1970; Quirk, 1972). The extreme variability is probably due to the orientation of the researcher, in particular the criteria used to define a speech disorder and whether the aim was to record every minor deviation including dialect differences, or only those subjects who seemed to require therapy in order to overcome their specific problem. The most extensive reported incidence studies have been carried out in the United States, many years ago, and usually with populations of children. These studies (Blanton, 1916; Irwin, 1948; Johnson, 1924; Mill and Streit, 1942; White House Conference, 1931) have consistently indicated that articulation disorders (speech) are the most prevalent type of defective oral communication with children, generally comprising about 75 per cent of speech impaired children (Perkins, 1977). Moreover, approximately three quarters of these children will develop normal articulation without speech therapy by the age of 8-9 years (Milisen, 1971; Roe and Milisen, 1942; Saylor, 1949; Templin, 1953). Unfortunately, to date it has not been possible to isolate the factors which differentiate those children who will develop normal articulation unaided

from those that will not. Consequently the incidence of articulation disorders in childhood is not much value with regard to the number who will actually require speech therapy services.

The notable feature of both functional and organic speech disorders is their inconsistency and variability (Winitz, 1977). No two cases having what appears to be the same organic defect, will necessarily show equivalent or even comparable degrees of form of speech disorder. The variables of intelligence, speech learning aptitude (Lenneberg, 1969), social and language experience, emotional development and status all appear important determiners of the kind and severity of speech defects which derive from morphologic disorders. The recent achievements in the study of articulation development have emerged from several fields of study. The contributions of Chomsky and Halle (1968) in the field of modern phonological theory and the application of behaviour theory (Mower, Baker and Schutz, 1968), have provided some kind of explanation about the development of speech and a theoretical and practical framework for intervention strategies.

The discussion so far has focussed upon the common speech (articulation) disorders which do not appear to be the result of organic impairment. Some speech defects, however, are directly related to organic impairment (e.g. Pronovost, 1951 reported that 1.2 per cent of his total sample N = 565, of speech impaired persons, had speech defects due to cleft palates while a further 1.0 per cent were the result of cerebral palsy). Mecham, Berko and Berko (1960) found that between 70-80 per cent of a representative

sample of cerebral palsied population had some problem with verbal communication stemming either from a hearing loss and/or speech defects. While improved medical knowledge has reduced the incidence of cerebral palsy and cleft palate persons with impaired speech (i.e., improved surgical techniques), there is a dearth of systematic investigation into the appropriate methods of therapy used. The writer was unable to locate any studies which had focussed upon the effectiveness of speech/language therapy with cerebral palsied persons with speech disorders.

Articulation disorders associated with the loss of neuromuscular control due to lesions sited in the CNS or the peripheral nerves are given the generic name Dysarthria (Perkins, 1978). The data on dysarthria is meagre, probably because it is frequently associated with a degenerative disease and therefore the patient may have been too ill, or the therapist reluctant to treat such cases. Consequently, communication therapy has consisted primarily upon the establishment of non-verbal techniques (e.g. communication boards). however, many persons with intact language systems find these devices unsatisfactory, because of the limitations of vocabulary and concept choice. In future, Bliss Symbolics and developments in the electronic field may provide these speech impaired persons with more adequate means of communication. In summary, while over half the speech impaired population have problems with articulation (Perkins, 1978), there has been very little research pertaining to the most effective methods of therapy. However, it has been established (Milisen, 1971; Perkins, 1978) that after the age of nine any speech deviations will require

specialized assistance if they are to be eliminated.

The second type of disorder treated by speech/language therapists are those problems concerned with the structure of Language, both the development in childhood and the disturbance of language known as Aphasia. Over the last 70 years the problems of Aphasia have been observed and investigated by numerous people - doctors, psychologists, neurologists and speech/language therapists. The causal factors which have been identified include cerebral vascular accident ('stroke'), brain tumours, head injuries, or infections and toxic processes. Eisensen (1971) defines aphasia as 'a general impairment of language functioning associated with localized cerebral pathology'. This definition is consistent with that of Schuell, Jenkins and Jiminez-Pabon (1964), who also consider aphasia to be a general deficit which is characterized by a reduction of available vocabulary and impaired verbal retention. Smith (1972) reported in a longitudinal study of adult aphasics that objective measurements revealed impairment in all four language modalities and that severity in any single modality was generally reflected in the severity of impairment in the other modalities. This finding has been reported by a number of studies (Duffy and Ulrech, 1976; Porch, 1967; Weisenberg and McBride, 1935; Wepman, 1951), consequently it is usual to regard aphasia as a global language disorder.

The incidence of 'strokes' increases as a function of age (Health Department Report, 1975), but there is no reliable data on the proportion of stroke victims who become aphasic. A Danish survey found that approximately one third of stroke patients suffered from aphasia immediately

following the stroke (Quirk, 1972). While an American report (NINDS, 1970) estimates that about one fifth of the stroke population have aphasia, this estimate was endorsed by the American Speech Therapy Association (ASHA, 1977). Although cerebral vascular accidents can occur at any age, they are considerably more likely to occur in persons past middle age (Health Department Report, 1975) than in younger persons. Conversely, younger persons are more likely to incur head injuries as a result of an accident than older persons (Eisensen, 1973).

Aphasia has been described carefully by Goldstein (1965), Head (1926) and Goodglass and Blunstein (1973), and one result of the work of these investigators has been the development of a number of test batteries which have been carefully standardized over the past twenty-five years (Darley, 1977). Tests such as the Minnesota test of Differential Diagnosis of Aphasia (Schuell, 1965); the Porch Index of Communicative Ability (PICA) produced in 1967 by Porch; the Boston Diagnostic Aphasic Examination (Goodglass and Keplan, 1972); the Neurosensory Centre Comprehensive Examination for Aphasia (Spreen and Benton, 1969) and the Token test (De Renzi and Vignola, 1962). Such instruments provide numerical assessments for patient performance and consequently can be used in statistical studies to investigate change in aphasic behaviour over time as a result of therapy or medication. A number of studies have attempted to isolate the variables (e.g. age of patient, SES level, intelligence and education, severity of disorder, etiology of disorder, onset of treatment, etc.) which may affect the results of therapy.

Studies pertaining to the variable of patient-age include early investigations by Eisensen (1949) and Wepman (1951). The both used populations of war injuried males whose ages ranged from 18-60+ years. The subjects were given speech/language therapy for several months. The general finding in these studies was that the younger the patient the greater the progress. These findings were supported by Sands, Sarno and Shankweiler (1969), whose subjects were stroke victims ranging in age from 30-70 years (mean age 56.5). An objective method of measurement was employed, and the investigators concluded that age appeared to be a potent variable influencing the effectiveness of therapy. Similar results have been reported by Smith (1971), Vignola (1964), and Walker, Williams and Dell (1976). In general, therefore, the literature seems to suggest that the younger the aphasic patient the greater the degree of recovery with speech/language therapy.

Studies by Eisensen (1973), Darley (1971), Smith (1971) and Wepman (1951) indicate that SES level as measured by educational and occupational levels has an effect upon the subsequent effectiveness on therapy. It appears that persons with occupations requiring high levels of cognitive functioning, even if they were in the older age range, made excellent progress with speech/language rehabilitation. In general, higher SES level aphasic patients made better progress than lower SES level patients. This better progress seems to be related to a higher level of cognitive functioning prior to the onset of aphasia, and the relearning of basic language concepts is thus facilitated.

A number of investigators report a negative relation-

ship between the degree of severity of aphasia and the amount of improvement achieved with speech/language therapy (Butfield and Sangwill, 1946; Sands, Sarne and Shankweiler, 1969; Schuell, 1964; Vignola, 1964). However, Darley (1977) and Eisensen (1973) both claim that while the less severe aphasic yields to treatment better than more severe cases, some severe cases may benefit from therapy, and should not be deprived from therapy solely on the basis of severity. Patients free from sensory impairment and other health impairments appear to respond favourably to speech/language therapy, even if their aphasia is severe.

Darley (1977) surveyed the available literature pertaining to the etiology of aphasia and the degree of recovery made. He concludes that there is a differential rate of recovery depending upon the cause of the aphasia. Eisensen (1964) and Luria (1970) both suggest that persons who have suffered head injuries made greater improvements with therapy than those with cerebral vascular lesions or tumours. In other words, the degree of speech/language recovery varies with the etiology of aphasia, with persons who sustain external traumatic wounds (i.e. in war or accident) responding more favourably than those patients who had a stroke. However, it is possible that the data has been confounded by the variance of age range between the two types of the two groups of aphasic patients.

The data available suggest that what is commonly labelled 'spontaneous recovery' occurs primarily within the first month following the stroke. Reports are consistent that the time between the onset of aphasia and speech/ language therapy commencing is a significant factor with

regard to the degree of recovery due to speech/language therapy. The findings of Butfield and Zangwill (1946), Sands *et al.* (1969), Vignola (1964) and Wepman (1951) all support the conclusion that patients for whom speech/language therapy is initiated within six months, will show significantly more improvement than those patients who do not begin therapy until after six months after the stroke. Both Culton (1969) and Vignola (1964) claim that there is no further 'spontaneous' recovery after the two month period following the stroke has lapsed.

There is a paucity of controlled trials where the language defect is measured repeatedly in one series of aphasics receiving speech/language therapy and in a control series not receiving therapy, so that the results can be compared to distinguish 'spontaneous' recovery from improvement determined by speech/language therapy. There are obvious ethical problems with such research. However, Tyler and Eadie (1978) reviewed three published, controlled trials, those of Vignola (1964), Sarno, Silverman and Sands (1970) and Hagen (1973), and conclude that at present no definitive statement about the value of speech/language therapy to the aphasic population in general is possible. Further controlled studies are necessary. Enderby and David (1976) plan further controlled trials.

While there are a number of factors which seem to affect the outcome of speech/language therapy (Darley, 1977; Eisenson, 1973), to date there is no evidence to justify the automatic exclusion of any aphasic patient from at least a trial period of therapy. Gains from therapy seem to be maximized if treatment commences early and continues for at

least several months. The more frequent the therapy sessions the better the results. The gains that result from speech/language therapy include improved listening, reading, speaking and writing (Darley, 1977), as well as improved morale and social functioning (Henri, 1973).

There have been several studies which have examined the incidence of speech/language disorders with long-term geriatrics (NINDS, 1970; Quirk, 1972; Williams, Walker and Dell, 1976). It seems probable that about one quarter of geriatric patients resident in hospitals and nursing homes will have some kind of communication problem. It seems that every person with a communication handicap should be able to be assessed by a speech/language therapist and given at least a trial period of therapy (Darley, 1977; Eisenson, 1973), because communication skills are so important to all human beings and any impairment is the source of much frustration and stress (Perkins, 1978).

In New Zealand there has been one published study which has attempted to estimate the number of adult patients in a public hospital who 'need' the services of a speech/language therapist, as well as establish the extent to which speech/language disorders are recognised by medical personnel and what specific therapy was provided for the speech impaired patients. Over a twenty-eight day period, Welch (1977) screened the adult patients in four wards in an Auckland public hospital, for the four main types of speech/language disorders: Articulation, Language, Voice and Fluency. The screening procedure was in accordance with the guidelines recommended by Darley (1975) and the senior speech language therapist in the Health Service. The total

number of patients screened was 190, and of these 23 (12.1%) were found to have a speech/language disorder; 12 (52%) of these speech impaired patients were males, and 11 (47%) were females. Although medical personnel recognised articulation and language disorders, they failed to recognise 3 (13%) of the speech impaired adults who had disorders of Fluency (stutter). It is interesting to note that more than half (12) of the speech impaired adults had previously experienced a cerebral vascular accident. The distribution of speech/language disorders by age was different for each sex, with 9 (75%) of the males being in the 50-69 years age group, while the females were dispersed between the ages of 26-85 years, with 5 (45%) falling between the ages of 40-59 years. On the basis of these results, Welch concluded that there was a 'need' for a speech/language therapy service at the hospital studied. This survey by Welch (1977) is of particular interest in the present context because, to date, it is the only published study in New Zealand which has attempted to gauge the 'need' for a speech/language therapy service for adults.

It is noticeable that while there has been research which has attempted to isolate the variables which may affect treatment outcomes, the evaluation of speech/language therapy per se has not yet been thoroughly investigated. Many of the studies undertaken have basic design problems (lack of control group, lack of control for Hawthorne effect etc.). Moreover, a variety of methodological problems have inhibited evaluation studies (difficulty in controlling variables that affect the performance of untreated subjects; difficulty in obtaining reliable and valid measures of

improvement because of the considerable variability in kind and degree of impairment within aphasic populations; difficulty in describing and accommodating the often very considerable differences between therapists and methods of treatment etc.).

Such difficulties also arise when attempts are made to evaluate remediation of Voice disorders. Few of the studies which have been undertaken in this area are without serious design problems, and interpretation of such studies is thus very difficult.

It is perhaps in the area of Voice disorders that the interdependence of medical personnel and speech/language therapists is most evident. According to Perkins (1973-1978), a voice is defective 'if it lacks power, is unpleasant, or abuses the vocal mechanism'. While hoarseness is typically an early sign of laryngeal pathology, it should be noted that such pathology could be simply an inflammation or a malignancy. It is therefore essential that a careful laryngeal examination is carried out by specialist medical personnel before any speech therapy is attempted. Conversely, after surgery or medical treatment, the services of a speech/language therapist are required for vocal rehabilitation in order to prevent further vocal abuse or to establish alternative voices (Brodnitz, 1958; Gabriel and Jones, 1960; Cooper, 1971).

A number of surveys have been made of school children on the basis of a survey carried out in Australia. Toothill (1975) found that one per cent of the sample had developed vocal nodules, with 3 boys affected to every 1 girl. Silverman and Zimmer (1975) found that 23.4 per cent of the

American school children they examined showed noticeable hoarseness. However, Greene (1978) reported that vocal strain was not common among children in England, and suggested that climate may be a contributing variable. Unfortunately, comparable data for adults are not available, although early surveys by Morris (1939), Mills and Streit (1942) and Pronovost (1951) suggest that the incidence of voice disorders in the general population is approximately one per cent, and that persons with voice disorders constitute between five and fifteen per cent of the speech/language disordered population.

Much of the research which has focussed upon Voice disorders has been concerned with identifying the causes of laryngeal pathology; and alcohol, smoking and vocal abuse are all considered to contribute to the increasing incidence of this type of disorder (Boone, 1971; Perkins, 1978). Snidecor (1971) maintained that there had been a 75 per cent increase in cancer of the larynx during the previous decade in the United States. It was also noted, however, that the mortality rate had increased by only 42 per cent and as a result there were more persons surviving who require post-operative rehabilitation to develop new speech behaviours (e.g. esophageal speech). The International Association of Laryngectomees has estimated that approximately 9,000 individuals underwent surgery for laryngeal cancer in 1975 (ASHA, 1977). In fact, intra-oral cancer accounts for approximately one tenth of all human malignant diseases with the greatest incidence of the disease occurring in the 50-69 age group (ASHA, 1977; Konecny, 1971; Milisen, 1971). In New Zealand, the only relevant figures available

(Health Department, 1975) are the number of laryngectomies performed in 1969-70 (0.86 per ten thousand of the population) and the number of persons over the age of 20 years who sought help for aphonia or hoarseness (0.39 per ten thousand population). Such figures cannot provide any guide to the number of individuals who are actually in 'need' of service but do not seek it.

Several features are readily apparent in recent literature pertaining to Voice disorders. Firstly, Voice disorders are described in greater detail than formerly was the case, thus reflecting increased understanding of the basic problems involved with voice production (Moore, 1977). Secondly, according to Perkins (1978), there is much more attention being paid to specific aspects of voice disorders (e.g. special surgical procedures to relieve spastic dysphonia). A third feature is the improved electronic technology, for example the laryngograph (Wechsler, 1977) which greatly assists the client and the therapist, with rehabilitation. Finally, the methods of measurement with regard to voice, are becoming much more accurate and objective (Moore, 1977). Aerodynamic studies of voice production attempt to arrive at a scientific assessment, description and diagnosis of vocal output, in place of the rather unsatisfactory subjective descriptions (e.g. hoarse). Measurements of tidal volumes, maximum inspiratory capacity, expiratory reserve volume, etc. are made. Iwata and Von Leden (1970) examined 192 pathological cases and found that measurement of air flow rate during maximum phonation time was of value. In addition, they found that a proper balance between glottal resistance and

sub-glottic pressure and an adequate air supply are essential for production of normal voice (Greene, 1978). These four factors should permit much more adequate evaluation to be made of speech/language therapy programmes.

Cooper (1971) attempted to measure the progress made by patients (N = 628) who had vocal nodules, polyps, or contact ulcers. The condition of the larynx was evaluated by a laryngologist and the voice by a speech/language therapist before and after therapy. The results clearly indicated that speech/language therapy was effective with those cases; 72.8 per cent made an excellent recovery, 16.7 per cent appeared to have made a good recovery, and 10.5 per cent were judged to have made a fair recovery. As inflammations of the larynx can develop into more serious pathology if left untreated (Perkins, 1978), the importance of speech therapy to re-educate the client with regard to voice production, cannot be overemphasized (Cooper and Nahum, 1967).

Until recent years, the speech/language disorder which has probably commanded more attention than the other three types combined, is stuttering/stammering - a disorder of Fluency (Bloodstein, 1975; Perkins, 1977, 1978). Stuttering has been the source of much misery and debate, at least since the era of ancient Greece and possibly before that (Van Riper, 1972). The research literature on stuttering is perhaps more voluminous than that concerned with any other aspect of speech/language pathology. One reason for this fact could be the number of prominent speech/language professors (e.g. Wendall Johnson and Van Riper) who were themselves afflicted with this disorder. Researchers have

been engaged for many years in attempting to provide more detailed and complete descriptions of the pattern behaviour which is labelled stuttering. Attempts have also been made to identify and evaluate various therapeutic strategies, and a variety of theories of the nature and etiology of stuttering have been developed.

Stuttering is usually defined as the abnormal timing of speech sound initiation (e.g. Perkins, 1978). The incidence of stuttering among various populations has been reported by a number of investigators (Andrews and Harris, 1964; Morris, 1939; Morley, 1952; Milisen, 1971; Peacher, 1946; Sheehan, 1970; Van Riper, 1971). Most studies show an incidence rate of 3-4 per cent in school children, and approximately 80 per cent of stutters appear to recover by adulthood. Stuttering thus affects approximately 0.5 - 1.0 per cent of the adult population. To date, there are no reliable figures on incidence of stuttering among New Zealand adults. The Health Department Report (1975) estimated that there are 1,425 persons between the ages of 20-60 years who stutter in New Zealand. It should be noted, however, that this estimate could well be conservative.

In view of the relatively high incidence of stuttering, it is amazing that no adequate theory on stuttering has emerged. Florin (1976) and Perkins (1978) suggest that the major orientations towards stuttering, both in terms of etiology and treatment, have been akin to those evident in general psychology, at different periods. The three main schools of thought include - the cerebral dominance theory, the psycho-analytic theory, and the modern learning theory (including operant and classical conditioning).

The theoretical explanation of stuttering as an organic problem has been held by Cherry and Sayers (1956) and West (1958), while Andrews and Harris (1964) have argued that the potential to stutter is genetically transmitted. While it is clear that the tendency to stutter does run in families (especially families with twins) and occurs mainly in males, with a ratio of 5:1 (Perkins, 1978), all these factors could be attributable to environmental influences but the possibility of a genetic basis cannot be discounted. Similarly, there is no real evidence to support the concept that stutterers differ from non-stutterers with regard to intelligence (Sheehan, 1970).

The concept of stuttering as a neurosis has been postulated (Travis, 1971), but results from research studies have yielded contradictory results (Bloodstein, 1957; Christenson, 1952; Richardson, 1944; Rutter, Tizard and Whitmore, 1965; Sheehan, 1970). To date, a clear association between stuttering and psychiatric disorder has not emerged, indeed the consensus of opinion seems to be that stutterers do not differ noticeably from the general population in the rate of psychiatric disorders.

There have been several learning theory approaches to the problem of stuttering. Ingham and Andrews (1973) have reviewed the application of behaviour therapy to stuttering and concluded that operant conditioning procedures appear to be useful for effective therapy, but to date there is a paucity of studies which have systematically evaluated therapy outcomes.

In summary, therapeutic procedures within each basic orientation to the problem have proved effective with some

clients (Perkins, 1978; Van Riper, 1971). Unfortunately, investigators often fail to report the exact procedures used, objective measurements of stuttering made both prior to and following treatment, and whether the effects are sustained in the long term. There are, however, a few studies which appear to indicate that speech/language therapy is effective, both with children and adults (Inham and Andrews, 1971; Prins' series, 1970, 1974, 1976; Van Riper's 1958 series). It would appear from this research that treatment needs to be intensive and followed up with further short courses if fluency is to be maintained.

It is now possible to measure objectively the degree of severity of a stutter by counting disfluencies per minute. Typically however, as Hoops and Wilkinson (1973) note, there is some variability between listeners on what is labelled a stutter.

While the literature on stuttering is considerable, much more needs to be learned concerning the relationship between the various types of manipulable variables and their influence on speech production. Information about the factors which tend to reduce the incidence of stuttering with increased age and yet complicate the persistent cases, would be useful for the development of improved techniques for treatment. The most obvious fact is that males are much more prone to stutter. Why this should be so is not apparent; however, there is no evidence to suggest that SES or any other gross environmental factor is implicated in the etiology of stuttering. What is certain is that approximately one per cent of the general population are afflicted with this disorder.

Clearly the status of knowledge concerning the incidence of speech/language disorders among adults is piecemeal and generally rather unsatisfactory. There has been a tendency for researchers and clinicisn to focus upon one type of disorder; this is due in part to the diversity and complexity of the disorders. Unfortunately, there seems to be a lack of co-ordination between the various research workers. In general, the medical profession have been most interested in problems associated with disorders of speech, language and voice, while psychologists have tended to focus on unravelling the problems of fluency. One fact remains clear, there are a considerable number of adults with speech/language disorders who urgently 'need' assistance with their particular problem even though present knowledge of such disorders is woefully inadequate.

SPEECH/LANGUAGE THERAPY SERVICES FOR ADULTS OVERSEAS

No studies concerned with the incidence of speech/language disorders among the adult population in general and/or descriptions of the kinds of provisions available to adults requiring speech/language therapy appear to have been published, and an attempt was thus made to contact relevant overseas personnel in the field of speech/language therapy. A mimeographed letter was sent to 46 authorities, professional bodies, a director of a university programme in speech/language therapy training in the United Kingdom, United States of America, Canada and Australia (a copy of the letter and a list of the persons/associations who replied are included in Appendix E). An attempt is made

below to summarise the information received from the speech/language therapists working in the United Kingdom, the United States, Australia and Canada, regarding provisions for adults with speech/language disorders.

The United Kingdom

Copies of the circularized letter were sent to the Secretary of the College of Speech Therapists and to five Training Centres for speech therapists in the United Kingdom. Replies were received from the College of Speech Therapists and four teaching facilities (i.e., 83.3% response rate). According to Doran, Rustin and Wallace (1977), the facilities for speech therapy in the United Kingdom have steadily increased since the National Health Service was established. Most large general hospitals in Britain have speech/therapy departments with full-time staff, the number of staff depends upon the types of specialized units within a particular hospital (paediatrics, E.N.T., neurological, physical medicine, geriatric, etc.). It is reported that the medical staff from such units tend to refer comparatively large numbers of patients for treatment. Each of the seven hospitals in the Camden and Islington area of London has a Speech Therapy Unit, staffed by a head of department and two or three assistants - all trained speech therapists. While the majority of adult patients in the Camden/Islington Area are still treated in hospital clinics, there have been changes since the Quirk Report (1972) with the result that speech impaired adults are now able to receive treatment in the community. An example of this type of service is what is known as the "Stroke Class". Such a

class is physically located away from the hospital, and the programme attempts to rehabilitate the patient in all facets of daily living including communication. Thus, in addition to individual speech/language therapy sessions, the post stroke patient is provided with group activities. Considerable interest has developed in the formation of clubs for different groups of speech impaired adults, especially post stroke and laryngectomized patients. Such clubs are run jointly by the patients and therapists and provide an example of the link with people in the community. Limited amounts of domiciliary treatment are also undertaken by speech therapists with those speech impaired persons who are unable to attend the clinics, classes or clubs. All these services are provided free of charge to the consumer. An adult caseload consists of stroke, laryngectomies and other voice disorders, as well as stutterers. Clinics for adult stutterers are being set up away from the hospital setting, usually in a university department.

In brief, the situation in the United Kingdom seems to have changed since the publication of the Quirk Report (1972), and implementation of the suggestion that speech/language therapy services extend from the confines of a hospital seems to have begun.

The United States

Copies of the circularized letter were sent to the American Speech and Hearing Association (ASHA), and to twenty-nine of the contributing authors to the definitive text 'Handbook of Speech Pathology and Audiology' edited by Travis (1971). Replies were received from the Secretary of

ASHA and twelve of the contributing authors (43.3% response rate). As the information received was specific to a particular institution (listed in Appendix E) with the exception of ASHA, and some states had more than one response while others had none, it is not possible to generalize from the information to the United States per se. ASHA do publish detailed (but expensive) guides to both clinical and academic programmes, but these were not available at the time of the study. In general, while there is information about the speech/language services for school children, similar information for adults seems to be much more difficult to locate.

The information available from individual universities was as follows. The University of Southern California provides intensive stuttering programmes for both children and adults (a copy of the programme and costs is tabled in Appendix E).

The Southern Illinois University (Carbondale, Illinois) has a Clinical Centre which incorporates a whole range of services, including Physical therapy, Hearing rehabilitation and evaluation, psychological evaluation and counselling, and speech/language therapy. The Clinical Centre is staffed by specialists in each field who provide a service to the local community as well as to university students. In addition to the specialized services, the Clinical Centre is the central organization that coordinates aspects of clinical instruction and research projects for students. The Centre also serves as a demonstration unit for the various disciplines and promotes teamwork between the different professionals involved in the assessment and

treatment of clients. Fees are based on a sliding scale and are discussed at the first session with the client.

The University of Maryland provides the whole range of speech/language therapy - both assessment and treatment for ambulatory adults, as well as children. Fees for the services are dependent upon the client's ability to pay.

The Indiana University provides speech/language therapy services for both children and adults. Treatment is offered for the whole range of speech/language disorders including language rehabilitation for adults who have hearing impairments or those who have suffered from a stroke. The clinical staff also provide assessment and therapy services to residents of a nearby geriatric home.

It should be noted that a number of respondents did not provide specific information about services for adult clients (either because they were not aware of such services or because such services did not exist). In conclusion, it can be said that some universities with Speech/Language Therapy Departments provide assessment and clinical treatment for both adults and children with impaired communication. In many cases an attempt is apparently being made to become involved in the general community (rather than just the university population) with regard to the provision of services, and fees appear to be flexible i.e. according to the client's ability to pay.

Australia

Copies of the circularized letter were sent to the Australian Association of Speech and Hearing, and to one of the training centres for speech pathologists or a speech

pathologist in each of the following states - New South Wales, Victoria, South Australia, Western Australia and Queensland. Replies were received from the Australian Association of Speech and Hearing, and various individuals in the five states (i.e. a 100% response rate). In addition the Head of Department of Speech/Hearing at the University of Queensland provided a list of all the centres providing speech/language therapy in Queensland. A copy of the circularized letter was sent to these 15 centres, and replies were received from four (24.6%).

The Australian Association of Speech and Hearing provided the writer with a booklet listing/detailing all the employing authorities in Australia. Apparently, speech/language services are available to adults in hospital clinics, rehabilitation hospitals, some geriatric homes, and some psychiatric hospitals. The employing bodies include the State Public Service which incorporates the Education Department, Hospitals Department and Mental Health Department; the Commonwealth Public Service which includes the Rehabilitation Department and the Repatriation Department. In addition to these State and Federal Government employers, there are private employing bodies (e.g., private hospitals). All types of facilities for handicapped persons have provision for a speech/language therapist. In general, there seems to be many more speech/language therapists employed in the context of the general population than with school children (whereas, in New Zealand the converse is true).

While each state in Australia organizes its own education and health services/facilities, the situation in

Queensland seems to be a reasonable example of the types of facilities available for adults with speech impairment in Australia. There is no apparent reason to suspect that Queensland is radically different from the other states. Indeed the Australian Association of Speech and Hearing claims that such facilities are available in all parts of Australia where the population density is sufficient to support such services. A list of the centres providing treatment for adults in Queensland is included in Appendix E.

Personal replies were received from four Queensland speech/language therapists, all of whom attempted to provide brief descriptions of their facilities, types of classes, etc. The Townsville General Hospital employs two speech/language therapists who treat both in-, and out-patients. In addition there is a Speech/Language Clinic located in the Community Health Centre. The therapist in the Community Health Centre is a member of a health team (medical officer, social workers, physiotherapist, occupational therapist, speech/language therapist, community health aids, and a home help organizer). This team of specialists aim to support the existing health service e.g. the general practitioner, and provide health education to the local community.

The four facilities treated both children and adults with all types of disorders - speech, language, voice and fluency. No mention was made of special facilities for stutterers or the cost of services to the consumer. In brief, the services in Australia seem to be orientated to the general population rather than concentrating on children. Perhaps the most interesting report was the description of a

speech/language clinic in a community health centre, where the therapist is a member of a team. Perhaps this type of facility would be appropriate in New Zealand.

Canada

Copies of the circularized letter were sent to the Canadian Speech and Hearing Association, and the Department of Speech Pathology and Audiology at the University of Alberta, McGill University, and Dalhousie University. Replies were received from all four sources (i.e. 100% response rate). The most comprehensive information was received from the University of Alberta. This included a copy of a report written by an Inter-Agency Committee on Speech Language and Hearing Services, under the chairmanship of Dr E. Boberg. In this report it is concluded that, in Alberta, the incidence rate of speech impaired is at least 10 per cent. In 1975 there were 120 speech pathologists and audiologists in Alberta, only 40 of whom worked directly with children (total population of Alberta is approximately two million).

In general, speech/language therapy seems to be provided for adults in the context of hospitals and rehabilitation units which may be attached to a university (for example, the University of Saskatchewan has a Department of Rehabilitation Medicine). While Saskatoon has a population of approximately 128,000, the unit at the university is the only facility available for speech impaired adults. The unit was established in 1960 and now serves a ratio of 1 adult to 3 children. The average number of patients is about 145-150 per month. Unfortunately, no

information was provided about the staffing ratio. The types of adult cases for one month include mainly Aphasics, followed by Dysarthria (i. e. speech) voice disorders and stutterers, as well as several cases of diseases of the CNS (Multiple Sclerosis and Parkinsons' disease).

In summary, while the information about overseas services reported here is conspicuously sparse and incomplete, the relevant point to note is that all these countries acknowledge the importance of remedial help to ensure adequate communication skills for adults as well as children. The evolution of the different models or types of services in the four countries is no doubt a reflection of differential historical, social, economic and geographic conditions which have prevailed. While these other countries seem to cater for speech impaired adults in some way, there appears to be a definite lack of research to establish 'real need' for therapy and facilities (i.e., services based upon the actual incidence of the four types of disorders in relevant settings). For the most part, speech/language therapy services have developed in a rather uncoordinated manner and clearly this type of development does not provide for the future evaluation of services. If an attempt is to be made to effectively accommodate the 'real needs' of those in the community with speech/language problems, it is necessary to measure and describe the situation prior to the introduction of treatment and/or services and then measure or evaluate afterwards, so that modifications can be made where services are either not reaching clients or are not operative effectively.

While the Education Department in New Zealand has

trained speech/language therapists to work with children and by overseas standards has an excellent ratio of therapists to children, it would appear that the time has arrived to extend the training of speech/language therapists to ensure that they have sufficient expertise to accommodate all speech impaired persons. A recent commission under the chairmanship of Professor McKerracher presented a report which suggested that in order to establish the 'need' for speech/language therapists to work with adults a series of surveys in different parts of New Zealand should be undertaken as soon as possible, and that the training of speech/language therapists be suitably upgraded to a university degree level, which would give parity with other English speaking countries. If an accountable system is to be instituted (as clearly it ought to be), it is highly desirable if not mandatory to first establish the 'need' for a service. The present study represents a modest step in that direction. The primary aim was to sample a number of different adult populations for speech/language defects and from the data to provide a description of the types of persons with speech/language disorders in relation to the variables of sex, age, type of disorder and degree of severity, factors which would require consideration if plans were being made regarding the types and locations of speech/language therapy services. Such data would also provide a basis for measuring the impact of such services on the speech impaired population.

CHAPTER 3

METHODOLOGY

GENERAL DESIGN

A decision was made to limit the investigation to a number of specific, easily locatable populations, because on the basis of available data (albeit inadequate) it seemed probable that the incidence of speech/language disorders among the general Christchurch population would be relatively low, and if incidence estimates of speech impairment were to be derived from such random sampling it would be necessary to sample hundreds of persons in all areas of the city. The constraints of time and available resources, both human and economic, precluded such a strategy, consequently an agreement was made to probe a variety of subpopulations of adults within the total Christchurch population. Each subpopulation probe was designed and is reported as a separate study.

Study 1 was focussed on the traditional source of speech/language disorders among adults - patients in general hospitals - while Study 2 was directed at adults consulting general practitioners and an ENT specialist. The third study concentrated on a group of adults who seemed likely to be more 'at risk' in terms of speech/language problems than the general population, viz. persons who consulted social workers and/or psychologists because of some kind of adjustment problem. Study 4 was concerned with a cross-

section of ordinary people in the community in three different locations, and in Study 5 the provisions for one type of speech/language disordered adults in Christchurch were examined - a Stuttering Clinic.

The major objective of the first four studies was to provide incidence figures for each particular sub-population and provide some descriptive data about the speech impaired adult population, which could facilitate the planning and provision of adequate and appropriate remedial services for adults with speech/language impairment. Secondly, the basic descriptive data provides a base line for comparing incidence rates after services have been in operation for some time.

PROBLEMS OF DEFINITION AND MEASUREMENT

It is acknowledged (Bennett, 1971) that the diagnosis and remediation of speech/language pathology is a relatively new endeavour, and one disadvantage of its youth is the proliferation of problems of identity and terminology. Clearly, the study of speech/language pathology has evolved from a number of disciplines and consequently borrowed heavily from them. Many terms and their meanings lack clarity, in fact they are often ambiguous and even inappropriate. Moreover, duplications and disagreements are not uncommon (Michel and Wendahl, 1971; Milisen, 1971; Perkins, 1977). The speech/language pathologist is concerned primarily with behavioural (overt behaviour) and cognitive (covert behaviour) data. While there is no doubt that speech/language data are public and can be observed and measured in some form, the assessment of speech/language is

still in what could be considered a pioneering stage of development and many characteristics of speech/language (e.g. hoarseness of voice) can only be measured in terms of subjective judgements. Although with increasingly sophisticated technology, measurement is gradually becoming more objective. However, the use of the newer methods of measurement are not yet widespread, consequently the use of human observers is the norm, and as these observers are fallible, some degree of observer bias is almost always present.

The main point is well presented by Milisen (1971) who argues that speech/language behaviour is 'dynamic and extremely variable' (even from the same subject). This variability increases the complexity of the verbal environment and the objectivity of any judgement about the quality of the speech/language behaviour. Milisen (1971) claims that speech may be defective because of too much or too little emphasis on any element in the speech act. Moreover, any attempt to analyse the speech sample into its various parts is likely to yield somewhat arbitrary divisions which would be unlikely to be representative of actual speaking behaviours. This situation is probable because speech/language behaviour is necessarily characterized by discrete classes derived by an investigator (e.g. Speech, Language, Voice and Rhythm), which require somewhat arbitrary distinctions about speech samples, and in terms of classification employed fall into two classes.

Another factor which must be considered is that speech is primarily a vehicle for communication and as such involves both a speaker and a listener. Consequently,

for speech to be judged defective, it is necessary for either party (i.e. speaker or listener) to react to the process of speech in such a way that it interferes with the communication of the content. This point is summarized by Milisen (1971), "The person is speaking 'defectively' at the moment attention is directed to process (how he is speaking) whereas he is speaking 'normally' when attention is directed to content (what he is saying). This kind of interchange may occur repeatedly in any one interaction (p. 260)". In other words, the reactions of either speaker or listener may fluctuate between complete acceptance to complete rejection, or any intermediary point. These variable reactions or responses can occur even though the actual deviations remain relatively constant. Thus measurement of a deviation would not necessarily indicate the magnitude of the speech/language defect, because the extent of the defect depends on who is listening. The result of this dilemma is that the judgements used in determining the incidence of spech/language disorders tend to have relatively low reliability and consequently questionable validity. If the investigator uses trained personnel (e.g. speech/language therapists) to screen for speech/language disorders, the reliability of the judgements will be greater but the validity still questionable, because a trained observer will be distracted from the content of speech by simple substitutions (e.g. w for r), but the validity of this judgement is still questionable because untrained observers will not be distracted from the content so easily. However, if untrained persons are used to screen for speech/language disorders, the converse may occur (Hoops

and Wilkinson, 1973; Milisen, 1971; Pronovost, 1951). It is apparent that trained observers do more labelling of speech deviations than untrained observers, therefore a speech/language therapist may report accurately many minor deviations which seldom attract attention from untrained ears, and consequently perhaps should not be classified as speech defects.

The greatest porportion of linguistic interactions of speech/language disordered adults is with their families, friends, and the various community services including doctors and social workers. This 'social' aspect in evaluation of what constitutes a speech/language disorder had implications for this study both in terms of methodology adopted and the perceived outcome (e.g. suitable speech/ language services). In particular, in an attempt to maximize the reliability and validity of the investigation, a number of procedures were adopted. The notion that effectiveness of communication within a social context is considered to be as relevant and valid as the judgement of a speech/language therapist led to the inclusion of untrained observers in the investigation (e.g. general practitioners and social workers) as well as trained observers.

All the observers (both trained and untrained) were instructed to record only those speech/language disorders which were sufficiently deviant to attract attention from the 'content' of speech to the actual 'process' or if the speaker acknowledged concern about his/her speech. The rationale for limiting the recording of speech/language disorders to these two dimensions was related to the following factors. It was anticipated that the immediate

future speech/language services for adults would focus upon the alleviation of newly acquired types of disorders, with the exception of stutters (i.e. those precipitated by a recent medical condition), rather than upon the speech disorders which had been present in childhood. The reasons for providing some kind of initial selection process included the need to limit the range of service according to present resources, and the fact that adults with disorders of speech which have persisted from childhood probably have already had the opportunity to receive speech/language therapy during their school days. It seemed unlikely that minor articulation disorders (e.g. substituting w for r) which have persisted into adulthood would either interfere with effective communication or would respond well to therapy, unless the person was highly motivated to alter his/her behaviour. The difficulty of altering established behaviour patterns which have persisted for long periods is well known and such a difficulty seems particularly likely in the case of speech behaviour (Perkins, 1971; Van Riper, 1971) because behaviour is an integral part of personality and often appears to be self-reinforcing, making the task of elimination almost impossible. This viewpoint is not meant to imply that services for persistent minor articulation disorders are unnecessary, but simply to suggest that they probably would not have high priority in the initial establishment of services for adults.

In accordance with the rationale that deviant speech/language interferes with effective communication as judged by the listener, the primary method of data collection adopted in the present investigation involved the responses

of both trained and untrained listeners to a sample of conversational speech elicited by a set of standard questions. It is acknowledged that there are standardized tests for some of the speech/language disorders, but they have been designed to indicate the characteristics and severity of particular disorders so that plans for treatment programmes can be made and the effectiveness of such treatments be measured. Most of the standardized tests were unsuitable for the present investigation, where the primary aim was to register the incidence of speech/language disorders in a number of subpopulations rather than plan for or evaluate therapy programmes.

DEFINITIONS

One of the problems with research in the field of Speech Pathology has been the apparent neglect of investigators to define the tems used, so that sensible comparisons could be made with later research projects. Therefore it was deemed essential to define carefully all the terminology used in the survey especially in relation to the four main types of speech/language disorders. The method used to define these categories was to analyse the frequency of use by three standard speech pathology texts (Perkins, 1971, 1977, 1978; Travis, 1971; Van Riper, 1972). The most frequently occurring descriptive phrases were used to define the categories of: Speech, Language, Voice and Rhythm. The observers (both trained and untrained) were provided with detailed information relating to the various terms and the causal factors which could precipitate a

speech/language disorder in an adult.

Need for speech/language therapy services refers to the number of speech/language impaired adults who have a problem. It does not mean simply those who would benefit from treatment, or those that are obviously evident - it means all speech impaired persons who are defined as adult.

An Adult is defined as a person who has either left school or has reached the age of eighteen.

A speech/language therapist is defined as a 'professional in the field of human communication and language pathology' (Education Department Report, 1978).

Speech is the process of producing speech sounds by means of movement of the lips, tongue, palate and pharynx in co-ordination with respiration and phonation. A disorder of speech refers to the substitutions, omissions or distortions from the 'normal' speech sound in a particular culture. This may range from a simple one sound problem to a slurring and distortion of practically all speech sounds, making speech unintelligible. The causal factors to disorders of speech in adults may be one or more of the following: (a) breakdown of or failure to develop the normal neurological pathways for speech; (b) sensory loss e.g. hearing loss; (c) structural abnormalities both congenital and acquired, of the speech mechanism; (d) inappropriate learning. However, the majority of moderate to severe speech disorders in adults are acquired, either as the result of injury or disease. Adults with speech disorders frequently have more serious symptoms from other categories e.g. Language impairment (due to neurological factors) or

Voice impairment (due to cancer). For this particular study in cases of mixed disorders, the classification will be reliant upon the degree of severity of the presenting symptom (i.e. the one which interferes with the content). This procedure will be adopted to ensure that persons with speech/language disorders are only counted once.

Language consists of an arrangement of symbols employed by beings who are capable of making associations between essentially arbitrary representations and events to express their thoughts and feelings. There are four components to the central language process: (a) a vocabulary of meaningful symbols; (b) grammar (linguistic rules for assembling symbols); (c) memory sufficient to permit processing the symbols; (d) an ability to utilize linguistic rules for decoding (i.e. sorting out speech symbols from noise) and encoding (selecting appropriate linguistic units). Aphasia is an impairment of any combination of these components. Causal factors include cerebral vascular accidents (this includes 'strokes, head injuries and tumours) as part of a degenerative disease of the nervous system. Failure to develop language can result from: (a) brain damage of malfunction; (b) mental retardation; (c) hearing loss; (d) environmental conditions. However, developmental language disorders are not relevant to this survey, for reasons already discussed, namely the person has probably received therapy in childhood.

Voice is the sound produced by the vibration of the vocal cords as air is expelled from the lungs and modified in tone by the cavities of the nose and face. Voice is considered

to be abnormal when it causes problems to either the speaker or the listener, or if the vocal mechanism is being misused. The aspects of voice most commonly considered abnormal are: (a) Pitch - when the voice is too high/low and inappropriate in terms of the person's age and sex; (b) Resonance - the presence of excessive nasality in the voice. Disorders of the voice can occur as a result of: (a) misuse of the vocal apparatus; (b) damage or disease of the nervous system which supplies the lungs, larynx or soft palate; (c) congenital malformations; (d) an emotional disturbance; (e) surgical removal of part or whole of the vocal mechanism.

Rhythm/Fluency - While normal fluency is the rhythmic pattern that exists in continuous speech, stuttering may be operationally defined on the basis of overt stuttering symptoms. In this study the following types of stuttering symptoms were registered: (a) repeats initial sounds; (b) repeats words; (c) hesitates before speaking; (d) prolongs speech sounds; (e) cessation of sound accompanied by a facial grimace. The causal factors are still uncertain.

The foregoing chapter has attempted to discuss the problems associated with research in the field of speech pathology - problems of measurement and the importance of definitions. The overall design has been used in order to try to come to terms with these problems. This series of probes into a variety of subpopulations within the city of Christchurch is essentially an exploratory undertaking, the purpose of which is to obtain some data about the frequency of the four types of speech/language disorders among adults, and some descriptive data about these speech

impaired persons so that future services may be planned according to 'real need' rather than just treating persons who happen to be in a certain place where speech/language therapy is available.

In summary, the writer endeavoured to overcome some of the methodological problems discussed, and thereby increase the reliability and validity of the findings by incorporating four procedures. The judgements about speech/language behaviour were confined to actual communication effectiveness, as either reported by an observer or the speaker him/herself. The judgements were made by a mixture of trained and untrained observers so that observer bias would be reduced and validity increased. The judgements focussed upon communication in its natural context rather than standardized tests which tend to be disorder specific. Finally, the basis for classifying speech/language disorders was derived from well known authoritative sources.

CHAPTER 4

STUDY 1: INCIDENCE OF SPEECH/LANGUAGE DISORDERS IN ADULT HOSPITAL PATIENTS

Speech Therapy services have gradually become available to some patients in the three major Christchurch hospitals (H1, H2, H3) over the past twelve years. A full-time position for a speech/language therapist was established in H1 in 1967, a part-time position in H2, and a full-time position in H3 was established by May 1977. Clearly, however, the number of therapists employed by the North Canterbury Hospital Board and/or the number of patients being treated by these therapists cannot be regarded as a valid indication of the 'need' for speech/language therapy services in the hospital patient population. The Education Department Report (1978) and the Quirk Report (1972) both make the point that there is a tendency for demand for a service to adapt itself to supply, and this can obscure the 'real need' of persons with disorders. In order to establish the 'real need' for a service, it is necessary to conduct a survey in the population that the service aims to supply. To date, both the number of speech/language therapists employed in the hospital service and the number of adults referred to these therapists appear to have been based upon the different interpretations of 'need' by hospital personnel, rather than upon any objective assessment of the patients' 'needs' with regard to disturbances in

communication patterns. In other words, services appear to have been set up somewhat haphazardly - possibly resulting from the efforts of individuals who were especially interested in the field of communication. This apparent lack of an overall plan, both for the New Zealand hospital service generally and individual hospitals specifically, has led to a situation whereby there can be no guarantee that attending physicians at a particular hospital are aware that the hospital employs a speech/language therapist. Moreover, even if doctors are aware of the availability of such a service it seems probable that many are not clear about the specific function of a speech/language therapist and the benefits which could accrue to their patients. There is thus a likelihood that there are a number of adult patients recovering from a precipitating medical condition (e.g. cerebral vascular accident, head injury etc.) who require speech/language therapy but are not receiving it, either because the hospital does not employ a therapist or because the attending physician is unaware of the service available or of the potential advantages of speech/language therapy for the speech impaired patient.

In the present investigation, an attempt was made to ascertain the number of adult patients presenting with definable speech/language disorders in H1, H2 and H3 during one calender month, and to relate the results of this screening (June 1977) to the referral pattern in the three hospitals for the previous twelve month period (i.e. June 1976 - May 1977). The objective of the present investigation was to obtain a reliable estimate of the numbers of adults in hospitals, who probably would benefit

from an assessment and/or treatment from a speech/language therapist, i.e. to establish the 'real need' for speech/ language therapy serivces within the adult hospital population.

SUBJECTS

At the time of the study (June 1977) the three hospitals surveyed had a total of 1028 beds. The survey population included every person over the age of eighteen who occupied a bed in the medical, surgical, and geriatric wards (maternity and psychiatric wards were excluded in response to an administrative request) in the three general hospitals during the month of June 1977 (Part A), and the speech impaired adults who were referred to the speech/ language therapists during the twelve month period prior to the survey (Part B).

While the three hospitals are all general public hospitals, each has its own particular characteristics. H1 is the largest and the oldest, it is located in the central city area and may be described as an 'acute' hospital. In general, all accidents and emergency cases are first admitted to H1 and then, depending upon the medical problem, the patients may be transferred to either H2 or H3 if long-term care is required. H1 has medical and surgical wards both for children and adults. In addition, the various specialists hold clinics (e.g. Eye, Head/Neck, etc.). H2 is located approximately eight miles north-east of the city centre. This hospital has obstetric wards as well as medical and geriatric wards, and apart from the

maternity wards the patients tend to be long term. H3 is located approximately four miles south of the city centre; it is the newest hospital of the three and includes the Intensive Care Unit for heart patients. In addition there are medical and surgical wards, a psychiatric unit and a geriatric assessment and rehabilitation unit. The geriatric patients in the unit in H3 are not long term, they are either returned to their homes or admitted to one of the multiplicity of the public or private facilities available for geriatrics who require long-term care. Table 1 shows the combined patient population. It can be seen that the medical staff considered 133 (12.9%) patients to be too ill to participate in the study. There were 12 (1.15%) patients for whom English was a second language who were excluded from the study, and 170 (16.5%) beds were unoccupied when the investigator was present in the particular ward. A total of 700 adult persons (392 males and 308 females) were screened for definable speech/language disorders. Table 2 shows the frequency and distribution of speech impaired adults who were referred to the speech/language therapists at the hospitals between June 1976 and May 1977 (Part B).

INSTRUMENTS

The criteria used in the screening of Christchurch adults in this series of probes into various subpopulations for speech/language disorders reflect the working assumption made in this study that the most important task to undertake at the present stage of knowledge was to identify as simply as possible the magnitude of the problem. In other words, to ascertain the number of adults with a definable speech/

Table 1

Total population (frequencies) of patients for three public hospitals in Christchurch (June 1977) in terms of survey categories.

Patient category	Hospital 1	Hospital 2	Hospital 3	Totals
Too ill	60 (14.2)*	39[a] (4.5)	34 (10.0)	133 (12.9)
Unwilling to participate	5 (1.1)	5 (1.8)	3 (0.8)	13 (1.3)
English as second language	7 (1.6)	1 (0.4)	4 (1.1)	12 (1.2)
Patients unavailable during survey or under 18 years of age	42 (9.9)	13 (4.8)	115[b] (34.1)	170 (16.5)
Persons screened with no apparent definable speech/language disorder	292 (69.1)	155 (57.6)	144 (42.7)	591 (57.4)
Persons with identifiable speech/language disorders	16 (3.8)	56 (20.8)	37 (10.9)	109 (10.6)
Totals	422	269	337	1028

* Entries in the main body of Table 1 are frequencies, while entries in parentheses are proportions based on the total within each hospital (vertical column) and in each category (horizontal column).

[a] Included patients in maternity wards.

[b] Included patients in psychiatric wards.

Table 2

Distribution of male and female adult patients referred to the hospital speech/language therapists between June 1976 and May 1977.

Month	Males	Females	Combined
June 1976	5	9	14
July	6	3	9
August	8	10	18
September	9	7	16
October	5	9	14
November	-	2	2
December	3	7	10
January 1977	1	4	5
February	6	7	13
March	1	4	5
April	3	3	6
May	5	7	12
Totals	52 (41.9%)	72 (56%)	124

Mean monthly frequency of referrals for males = 4.33 (S.D. = 2.68)

Mean monthly frequency of referrals for females = 6.00 (S.D. = 2.58)

language disorder (i.e. those in 'need' of a speech/language therapy service). The specific objective was to identify adults with obvious speech/language disorders and classify their disorders accordingly into four main categories - Speech, Language, Voice and Rhythm disorders, so that decisions about the future development of services for speech impaired adults could be based on the actual prevalence of the various types of speech/language disorders. Most of the available standardized speech/language tests seemed unsuitable for screening purposes because they had been designed to identify or diagnose specific types of defects (Minnesota Test for Differential Diagnosis of Aphasia (Schuell, 1965)) with a view to future treatment and/or measurement of progress. Moreover, such instruments require considerable time and expertise to administer, and therefore were impractical for a large survey where both trained and untrained observers were to be used in order to increase the validity of the results (see Chapter 3 for a full discussion of this point).

In brief, communication involves both a speaker and a listener, and if either party is distracted by the process of speech so that the content is obscured, such speech is judged defective. It is acknowledged that trained observers are generally more easily distracted from the content by the process of communication (e.g. even simple consonant substitutions tend to be noted) than untrained observers. Moreover, the majority of linguistic interactions that adults experience are with untrained observers e.g. family, friends and community personnel. Consequently the notion of effectiveness of communication during a structured

conversation was considered to be as relevant and valid as the judgement of a speech/language therapist, for the purposes of large-scale screening.

The investigator designed and developed the Speech/Language Inventory (SLI) in order to obtain relevant information from the speech/language disordered population so that future services could be based upon speech impaired adults 'needs'. A copy of the SLI is included in Appendix A. The SLI contained four separate categories of information.

Section A (Personal) dealt with general descriptive data on age, sex, occupation, date of onset of speech/language disorder and probable etiological factors. Such factors were coded into nine categories: (1) cerebral vascular accident - either an occlusion or cerebral rupture of a cerebral vessel; (2) head injury - traumatic blow from the external environment (e.g. car accident); (3) degenerative disease of the central nervous system (CNS) - diseases which attack and impair the function of the brain and spinal cord (e.g. Multiple Sclerosis); (4) disease/misuse of organs of head/neck - injuries and destruction of laryngeal tissue resulting from such factors as injuries via accidents, vocal abuse, mechanical and chemical irritants, diseases and growths including infections from internal and external sources (e.g. paralysis, benign and malignant growths etc.); (5) cleft palate - congenital fissue of the soft palate and the roof of the mouth, sometimes extending through the premaxill and upper lip; (6) cerebral palsy - paralysis or muscular inco-ordination due to intra cranial lesion. The

term is applied to a group of cerebral afflictions which are present from birth or appear within the first two years of life including Littles disease, spastic paralysis etc.; (7) developmental problems - speech/language have failed to develop at the expected age because of apparently slow maturation, hearing impairment, brain injury, mental retardation, or emotional disturbance; (8) no apparent medical basis - speech disorders which do not appear to have any organic basis (e.g. stuttering, specific articulation defects such as w/r substitutions); and (9) unknown - any type of speech/language disorder arising from an apparent multiplicity of causal factors where the extent of the contribution of a particular factor is not clear either to the attending physician or the investigator.

Section B of the SLI focussed on the Classification of speech/language disorders. It was necessary to define specifically the terms used in the survey, especially the four main types of disorders. Three standard speech pathology texts (Perkins, 1977; Travis, 1971; Van Riper, 1972) were examined, and the criteria used by these authors were used to define the categories of Speech, Language, Voice and Rhythm.

A patient was classified as Category 1 (Speech) if his/her speech was either abnormally slow or slurred, or if there was evidence of marked consonant distortion. Category 2 (Language) was used if the patient had limited output, comprehension problems, word finding difficulties or was unintelligible. Category 3 (Voice) was used to classify patients who had any of the following characteristics: voice too loud or too soft; pitch too high or

too low; hoarse or harsh quality; transient or permanent loss of voice; excessively nasal or reduced nasality. Category 4 (Rhythm) was used for those patients who repeated initial sounds or actual blocking (i.e. cessation of sound). Where a patient presented with more than one category of disorder, the observer classified the patient according to the most obvious or dominant problem at the time of screening. While this procedure seemed essential in terms of the objective of the study, it does tend to obscure the multiple difficulties encountered by some subjects.

Section C of the SLI was used to secure data on the Severity of the speech/language disorder. Each patient's disorder was classified as mild, moderate or severe. A mild disorder was defined as speech having some lack of clarity and/or fluency, containing occasional errors, but which appeared intelligible to the observer and achieved satisfactory communication. The term moderate was used to describe a definable speech language problem, where the patient may be intelligible to family and friends but not to the observer within the normal time limits. Such patients made frequent errors and were often misunderstood, thus restricting communication. A severe disorder was defined as a defect which consistently interfered with communication. The patient was misunderstood even by family and friends, while strangers and the observer required help in order to communicate at all.

Section D of the SLI was designed to provide information about the rate of referral of speech impaired adults to speech/language therapist; the length of treatment; and the

recipient's perception of the effectiveness of treatment received.

A short articulation test adapted from Goodglass and Keplan (1972) was also administered. It consisted of four test sentences which were normally presented orally (in order to test auditory memory) except when the patient was obviously having difficulty in which case, he/she was offered the option of reading the sentences which were presented in 1 cm high black letters on white card (18cm - 13cm). A copy of the articulation test is included in Appendix A.

PROCEDURE

A screening procedure based on guidelines recommended by Darley, Aronson and Brown (1975) was used with the adult patients in the three hospitals during the month of June 1977. All screenings were undertaken between the hours of 10 a.m. - 5 p.m. and an effort was made to complete an entire ward in a single session. The investigator screened all the subjects in H2, but in H1 and H3 assistance was received from the resident speech/language therapist employed by the Hospital Board. The investigator conducted training sessions/workshops on the use of SLI for these therapists with groups of patients. At the completion of training, exact agreement on both category and severity of speech/language disorders was obtained in more than 95% of a sample of forty patients.

All the patients were approached individually and given a brief explanation of the purpose of the survey together with details on what was required of them, and

The differences in the proportion of patient population screened and the incident rate reported are probably related to the individual characteristics of each hospital; for example, their different locations and different patient populations with regard to medical disability. A considerable proportion of patients with long-term illnesses are transferred from H1 to H2 and H3 depending upon the nature of their illness and the availability of beds. Long-term patients include those persons with degenerative diseases of the CNS, persons who have suffered from a cerebral insult (either internal or external) and geriatric patients. All these types of patients are more likely to have a considerably higher incidence of speech/language disorders than other types of patients (e.g. surgical).

The overall figure of 10.6% incidence rate is, however, comparable with that reported by Welch (1977) for a large Auckland public hospital. In that study, a population of 190 hospital patients was examined for speech/language impairment, and the incidence of definable speech/language disorders was 12.1% (23). The relatively small difference in these incidence figures (i.e. between the present findings and those of Welch) could well be due to the fact that in the present study patients were screened from a wider variety of wards, whereas Welch's study was confined to four medical and geriatric wards. In such wards the incidence would almost certainly be higher because of the greater age of the patients (geriatric ward) and the incidence of precipitating conditions (e.g. cerebral vascular accident) which would be found in medical wards. Indeed

their participation in the study was requested. If the patient appeared to have a definable speech/language disorder on the basis of the speech sample elicited, and the articulation test, the SLI was then administered. The format of the interview schedule is included in Appendix A. All the relevant information from the patient was obtained in a single interview which was of approximately five minutes duration.

Part B. An SLI was completed for every adult who had been referred for speech/language therapy to a Hospital Board speech/language therapist during the period June 1976 to May 1977 inclusive. This information was obtained from the senior speech/language therapist in the hospital service and from records.

RESULTS AND DISCUSSION

Incidence Data: Total Hospital Groups

In the total adult patient population of 1028 residents during June 1977 there were 109 (10.6% with definable speech/language disorders. Details on specific categories and particular hospitals are presented in Table 1. There were considerable differences between the three hospitals: in H1, 308 (70%) of the patient population were screened and only 16 (3.7%) were found to have definable speech/language disorders; in H2, 211 (78.4%) of the patients were screened and the incidence of speech/language disorders was 20.8% (56); and in H3, 181 (53.6%) of the possible patient population were screened, with 37 (10.9%) of patients presenting with speech impairment.

such a differential would be in accordance with available evidence (ASHA, 1977; Health Department Report, 1975; NINDS, 1970; Quirk, 1972) that speech/language impairment deriving from medical problems increases as a function of age. In brief, it would appear that approximately 10.6% of the adult patient population in the three Christchurch public hospitals have discernible speech/language disorders and that this figure is reasonably consistent with that obtained in the only other reported New Zealand study.

Incident Data - Referral Group

Table 2 shows that 124 speech impaired adults were referred to the hospital speech/language therapists between June 1976 and May 1977. The average rate of referral was ten persons per month with a range of 2-18 persons. The monthly variation could be due to a number of factors not actually related to patients 'need': for example, the vacation period of specialists such as ENT, or the number of speech/language therapists employed at that particular time (i.e. demand adapting itself to availability of services). While acknowledging that the population of speech impaired adults identified in the June survey was probably inflated by the presence of some long-term patients with disorders of th CNS (N = 23), it still appears that only a small proportion of adult hospital patients with speech impairment are ever referred to the hospital speech/ language therapists. In summary, while the observers in the June survey 1977 identified 109 adult patients with definable speech/language disorders, the total number of speech/impaired adults referred to the hospital speech

language therapists during the previous twelve months was only 124, and this difference cannot all be attributed to the presence of long-term patients because the composition of the two groups of speech impaired adults with regard to types of disorders was different.

Incidence of speech/language disorders for male and female patients

While there were more male than female patients in the three Christchurch hospitals during the month of June 1977, the proportions of patients with definable speech/language disorders were approximately the same for both sexes. Details on the incidence of speech/language disorders for separate sex groups at particular age levels are presented in Table 3. From information obtained from hospital administrators, the total hospital population (1028) contained a higher proportion of males to females at the time of the survey. There is no reason to suspect that the 700 adults who were actually screened were not representative of the whole patient population. Of this group, 392 (56%) were males and 308 (44%) were females. Furthermore, the distribution of males (N = 60, 55%) and females (N = 49, 45%) with definable speech/language disorders was almost identical with the original ratio of males and females. This result is also closely comparable with that reported by Welch (1977), who found that 52 per cent of his sample (N = 23) with definable speech/language disorders were males and 47 per cent were females. It would appear that within the public hospital population, females are as likely to have speech/language disorders as males.

Table 3

Distribution of Age by Sex for patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977 and the Referrals during the previous twelve month period (June 1976 - May 1977).

Age Group	Male patients		Female patients	
	1977 Survey	Referrals 1976-77	1977 Survey	Referral
18-29	7 (11.6)*	10 (19.2)	2 (4.0)	13 (18.0)
30-39	8 (13.2)	6 (11.2)	2 (4.0)	5 (6.9)
40-49	4 (6.6)	4 (7.6)	7 (14.2)	9 (12.5)
50-59	10 (16.6)	11 (21.1)	5 (10.2)	10 (13.8)
60-69	11 (18.3)	9 (17.3)	23 (46.9)	18 (25.0)
70-79	13 (21.6)	9 (17.3)	7 (14.2)	13 (18.0)
80+	7 (11.6)	3 (5.7)	3 (6.1)	4 (5.5)
Totals	60	52	49	72

* Entries in the main body of Table 3 are frequencies, while entries in parentheses are percentages based on the number of subjects in each column.

A similar pattern was found in Part B of this study (i.e. those speech impaired adults who were referred to the hospital speech/language therapists during the twelve month period prior to the June survey). Table 2 indicates that a total of 124 adults had been referred between June 1976 to May 1977, of these 72 (56%) were females and 52 (41.9%) were males. While the number of referrals to a speech/language therapist does not necessarily reflect the prevalence of actual disorders, it is interesting to note that the rate of female referrals is slightly higher than for males. The data for the twelve month period is thus consistent with the 1977 survey data. In that survey, female patients seem to be as prone to speech impairment as male patients. There was no indication in the reported literature that the proportions of male and female patients acquiring speech/language disorders would be comparable; indeed this finding was quite unexpected. Studies of childhood speech/language disorders invariably report a slightly higher incidence of disorders for boys than girls (Milisen, 1971; Saylor, 1949; Templin, 1953). Moreover, the belief that proportionately more males than females encounter cerebral vascular accidents and intra-oral cancer seems relatively widespread in the community. It is not clear from the data why more females than males were referred during the twelve month period. It could be the result of a number of factors; perhaps it is a reflection of the nature of the patient population resident in public hospitals (e.g. maybe the male patients are more seriously ill, and consequently more of them actually die). Secondly, perhaps personality factors or the degree of severity of the

disorder operate in a discriminatory fashion between the sexes or it may even be related to the reliability of the attending physician's observations. However, the important fact is that it seems that within the public hospital patient population, females are as likely as males to require the services of a speech/language therapist.

Distribution of speech/language disorders for particular age groups

In both sets of data (June Survey 1977 and the Referral Group) and for both sexes there is a higher rate of speech impairment in the 50-79 age group (Table 3). In fact the overall distribution with regard to age and speech impairment seems very similar in both sets of data. There are, however, two exceptions to this trend which seem to be of interest.

The June 1977 Survey data contained proportionately more of the male sample under the age of forty years than was the case for females, whereas the referral data is much more uniform. As will be noted subsequently (Tables 7 and 10), nine of the males in this younger age group were classified as stutterers. It is well established (Milisen, 1971; Perkins, 1978; Van Riper, 1972) that stuttering is more common in males than females and that the incidence decreases as a function of age, whereas the relatively small difference between males and females in the under forty age group in the Referral data may be due to the fact that medical personnel do not refer their patients with stutters to the speech/language therapist because this type of speech impairment is not viewed as an integral part of a

medical condition. This is at least consistent with the data in Table 8 which shows that only three persons with stutters were referrred to the hospital speech/language therapist during the Referral period and that none of these referrals was from hospital medical personnel but from an outside source (a general practitioner). The tendency for hospital personnel not to note if their patients stutter was commented on by Welch (1977). In his sample (N = 190), two of the speech impaired patients had stutters which were not recognised or considered relevant by the attending physicians. However, in the June survey 1977, the observers screened every patient in the three public hospitals for the four main types of disorders including stuttering, and found nine males under forty with stutters. It thus seems important to note the difference between the two sets of data with regard to the higher frequency of males under forty in the survey, because it indicates that there are probably a number of stutterers in the population who do not have access to the services of a speech/language therapist. It has been estimated that between 0.7% to 1% (NINDS) of the general population stutter, therefore it is of interest to find that 9 (1.2%) of the total number of patients screened did in fact have a stutter, and that it was the presence of these young stutterers which made the difference between the Survey data and the Referral data.

The second point to note with regard to age and speech disorders is the considerable increase in frequency of females between the ages of 40-49 years in both the Survey and Referral data. The increase in the incidence of speech/language disorders in the fourth decade was

associated with degenerative disease of the CNS. However, the proportion of females in the fourth decade could be inflated because H2 has an entire ward for female patients with diseases of the CNS, and it was noted by the observers that a high proportion of them had some degree of speech/language impairment. The ward under discussion is a long stay ward and the patients are drawn from a wide geographical area extending far beyond the confines of the city of Christchurch and its suburbs.

In summary, it would appear that the frequency of speech/language disorders in the three public hospitals, both during the June survey and the previous twelve months, tended to be greater in older patients. This finding was expected (NINDS, 1970; Travis, 1971) and is consistent with the fact that speech impairment which derives from medical etiology occurs more frequently in adults in the fifth, sixth and seventh decades.

Incidence of Speech/Language Disorders by Sex and Socio-economic Status

All the males and females screened in the June survey 1977 were subdivided into two broad categories in terms of their occupations (males) or their husband's occupations (females). Adults with definable speech/language disorders, who were classified as levels 1, 2 or 3 in terms of SES categories (Elley and Irving, 1976) were termed Upper SES and those classified as 4, 5 or 6 on the same scale were termed Lower SES. The distribution of male and female patients with speech impairment, in terms of these categories, is presented in Table 3. Information pertaining

to SES level was not available for some of the patients, and these patients are classified "Unknown" in Table 4. According to Elley and Irving (1976), 41 per cent of the urban population in New Zealand should be within the Upper SES categories. From Table 4, however, it can be seen that only 28 per cent of the hospital patients classified as having definable speech/language disorders were in the Upper SES categories. There was also considerable difference in the proportions of males and females in the two categories with approximately one third of the males in the Upper SES level and less than a quarter of the females. The proportion of the population in the Lower SES categories (Elley and Irving, 1976) should be 59 per cent for an urban area. In this study 60 per cent of the males and 47 per cent of the females were classified into this level. The data for the combined sexes indicate that 55 per cent of the persons with speech impairment were classified as Lower SES. Neither the Upper or Lower SES categories approximates closely the expected incidence in the general population. Since there was a sizable group (16.5%) of the patients for whom information about SES level was unavailable, however, it is difficult to be precise about the representativeness of the group in terms of SES. If the unknown category is omitted from consideration, 34 per cent of the adults with definable speech/language disorders are within the Upper SES categories and conversely 65 per cent in the Lower SES categories. The difference between these figures and Elley and Irving's is probably due to the fact that this study was conducted in three public hospitals and it is likely that a sizable proportion of Upper SES adults with speech

Table 4

Distribution by Socio-economic Status (SES) in terms of Upper (1, 2 or 3) or Lower (4, 5 or 6) categories[a] of patients with definable speech/language disorders in the three Christchurch public hospitals (N = 109) during the June Survey 1977.

Socio-economic status	Male patients	Female patients	Combined
Upper (1, 2 or 3)	20 (33.3)	11 (22.4)	31 (28.4)
Lower (4, 5 or 6)	37 (61.6)	23 (46.9)	60 (55.0)
Unknown[b]	3 (5.0)	15 (30.6)	18 (16.5)
Totals	60	49	109

[a] Elley/Irving (1976 and 1977) Scales.

[b] Information could not be obtained from the hospital records or from the patient.

* Entries in the main body of Table 4 are frequencies, while entries in parentheses are percentages based on the number of subjects within each column.

Table 5

Distribution of probable Etiological factors by sex for patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Cause of disorder	Male patients	Female patients	Combined
Cerebral vascular accident	29 (48.3)*	20 (40.8)	49 (44.9)
Head injury	4 (6.6)	4 (8.1)	8 (7.3)
Degenerative disease of CNS	7 (11.6)	16 (32.6)	23 (21.1)
Disease/misuse of organs of head/neck	2 (3.3)	3 (6.1)	5 (4.5)
Cerebral Palsy	1 (1.16)	1 (2.0)	2 (1.8)
Developmental	1 (1.6)	-	1 (0.9)
No apparent medical basis	13 (21.6)	4 (8.1)	17 (15.5)
Unknown	3 (5.0)	1 (2.0)	4 (3.6)
Totals	60	49	109

* Entries in the main body of Table 4 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 6

Distribution of probable etiological factors by sex within Upper (1, 2 or 3) and Lower (4, 5 or 6) SES categories[a] for patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Cause of disorder	Upper SES		Lower SES		Unknown SES	
	Male patients	Female patients	Male patients	Female patients	Male patients	Female patients
Cerebral vascular accident	11 (55.0)[a]	6 (54.5)	18 (48.6)	14 (60.0)	-	-
Head injury	1 (5.1)	-	1 (2.7)	-	2 (66.6)	4 (26.6)
Degenerative disease of CNS	2 (10.1)	3 (27.2)	5 (8.6)	2 (8.6)	-	11 (73.3)
Disease/misuse of organis of head/neck	2 (10.1)	1 (9.0)	-	2 (8.6)	-	-
Cerebral palsy	-	-	1 (2.7)	1 (4.3)	-	-
Developmental problems	1 (5.1)	-	-	-	-	-
No apparent medical basis	3 (15.1)	1 (9.0)	9 (24.3)	3 (13.0)	1 (33.3)	-
Unknown	-	-	3 (8.1)	1 (4.3)	-	-
Totals	20	11	37	23	3	15

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 6 are frequencies, while the entries in parentheses are percentages based upon the number of subjects within each column (SES category).

impairment would be resident in private hospitals.

Incidence of Speech/Language Disorders in terms of Etiological Factors

Details of etiological factors associated with speech/language disorders for separate sex and SES groups are presented in Tables 5 and 6. It can be seen that cerebral vascular accident was the most common cause of speech/language impairment for both males and females at both SES levels. Degenerative disease of the CNS was the next most frequent etiological factor for females, and no apparent medical basis for males. In fact, almost one sixth of the patients with speech disorder had not apparent medical basis for their speech problems. This group would include persons with stutters or simple articulation substitutions. From Table 7 it can be seen that nine males and one female had a stutter - the higher proportion of males with stutters is well established (Milisen, 1971; Perkins, 1978). In general, the findings with regard to etiology seem very similar to those documented in studies overseas (Milisen, 1971; NINDS, 1970).

Incidence of Speech/Language Disorders in terms of Type of Disorder

The distribution of the four types of speech/language disorders among the speech impaired patient population in the June survey 1977 and the Referral Group (those speech impaired adults who were referred to the hospital speech/language therapist between June 1976 to May 1977 are presented in Tables 6 and 7. It can be seen that Language disorders occurred most frequently for both male and female

Table 7

Distribution of Types of Disorders by Sex groups for patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Type of Disorder	Male patients	Female patients	Combined
Speech	20 (33.3)*	20 (40.8)	40 (36.6)
Language	28 (46.9)	26 (53.0)	54 (49.5)
Voice	3 (5.0)	2 (4.0)	5 (4.5)
Rhythm	9 (15.0)	1 (2.0)	10 (9.1)
Totals	60	49	109

* Entries in the main body of Table 7 are frequencies, while the entries in parentheses are percentages based on the numbef of subjects in each column.

patients in both sets of data. While no information on SES level was available for the Referral Group, Table 9 indicates that in the June 1977 sample there was a somewhat higher proportion of Speech disorders in the Upper SES group, while proportionately more Lower SES speech impaired adults were classified as having disorders of Rhythm.

Several differences between the males and females in the distribution of speech/language disorders among the two sets of data seem worth noting. In the June Survey 1977 data the overall distribution of disorders for males and females was similar with the exception of disorders of Rhythm (the reasons for this differential were discussed earlier). There were, however, considerably more females than males in the Referral sample and most of them appeared to have Voice disorders. The reasons for this can only be speculated upon, the published literature does not support the notion that females are more prone to Voice disorders than males and in fact the converse has more support (Konecny, 1960). It thus seems likely that some sort of selection bias for referral within the hospital was operating. The high proportion of Voice disorders in the Referral Group is probably a consequence of the presence of the ENT Clinic in H1. One of the specialists who worked in this clinic was aware of the speech therapy service and the benefits it can accrue to his patients with Voice disorders, consequently he refers patients to the speech/language therapist. Whereas, the medical personnel involved with the cerebral vascular patients who sustain either speech or language disorders may not be aware of the service or the benefits of the service to their patients and therefore do

Table 8

Distribution of Types of Disorders by Sex groups for patients referred to the speech/language therapist between June 1976 - May 1977.

Type of Disorder	Male patients	Female patients	Combined
Speech	18 (34.6)*	18 (25.0)	36 (29.0)
Language	22 (42.3)	25 (34.7)	47 (37.9)
Voice	11 (21.1)	27 (37.5)	38 (30.6)
Rhythm	1 (1.9)	2 (2.7)	3 (2.4)
Totals			

* Entries in the main body of Table 8 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 9

Distribution of Type of Disorder by socio-economic levels - Upper (1, 2 or 3) and Lower (4, 5 or 6) categories[a] for patients with definable speech/language disorders in the three Christchurch public hospitals during the June survey (1977).

Type of Disorder	Upper SES (1, 2 or 3)	Lower SES (4, 5 or 6)	Unknown SES
Speech	14 (45.1)*	16 (26.6)	10 (55.5)
Language	15 (48.3)	32 (53.3)	7 (38.8)
Voice	1 (3.2)	4 (6.6)	-
Rhythm	1 (3.2)	8 (13.3)	1 (5.5)
Totals	31	60	18

[a] Elley/Irving (1976) Scale.

* Entries in the main body of Table 9 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

not refer such patients to the speech/language therapist for therapy. Generally the proportion of Voice disorders among the speech impaired population is reported between 5-15 per cent (Milisen, 1971).

Incidence of Speech/Language Disorders in terms of Degree of Severity, in Age, Sex and SES Groups

The distribution of speech impairment in terms of severity by sex, age and SES groups is presented in Tables 11, 12, 13 and 14. It is clear that while approximately one quarter of the speech impaired adults in the June Survey 1977 were classified as mild, the majority of this population had either moderate or severe disorders and therefore in real 'need' of specialist help with their problems. There was no real difference between the degree of severity for males or females. It appears from Table 12 that the Referral Group contained slightly more cases in the mild category than the June Survey Group, otherwise the trends are similar.

The degree of severity differed somewhat according to the age of patient. Within each category of severity the incidence of cases increased with age (Table 13) e.g. more severe disorders occurring in the sixth decade than the fifth. It is probable that younger patients have a greater capacity to recover 'spontaneously' than the older patients, especially with regard to cerebral vascular accidents (Eisenson, 1949; Smith, 1971; Vignola, 1964; Walker, Williams and Dell, 1976; Wepman, 1951). Similarly, Voice disorders seem to increase in severity as a person gets older, especially if they are left untreated (Broditz,

1958, Cooper, 1971; Gabriel and Jones, 1960). Therefore it seems logical that persons with mild voice disorders are given appropriate speech language therapy, so that more serious impairment is prevented.

The proportions of speech impaired persons in the Upper and Lower (and Unknown) SES levels in relation to the degree of severity are shown in Table 13. While approximately one third of the Upper SES patients were classified in each degree of severity, the Lower SES patients showed a somewhat lower proportion of mild disorders and a higher percentage of moderate disorders. The observed differences in the distribution of degree of severity between the Lower and Upper SES patients could well be related to the educational level and occupation of the patient. A considerable body of research (Darley, 1972, 1977; Eisensen, 1973; Smith, 1971) has indicated that persons employed in occupations requiring high levels of cognitive functioning seem to make quicker and better recoveries from cerebral vascular accidents (cerebral vascular accidents were the most common etiology for a speech/language disorder in this study).

SUMMARY OF MAIN FINDINGS

(1) General incidence of speech/language disorders

In the total population of 1028 hospital patients (the survey group) approximately 10 per cent presented with a discernible degree of speech/language impairment. While during the twelve month period (June 1976 - May 1977) prior to the June survey, only 124 speech impaired adults were

Table 10

Distribution of types of speech/language disorders by age in patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Age Groups	Types of Disorders				
	Speech	Language	Voice	Rhythm	Combined
18-29	3 (7.5)*	1 (1.85)	1 (20.0)	4 (40.0)	9 (8.2)
30-39	5 (12.5)	1 (1.85)	-	4 (40.0)	10 (9.1)
40-49	4 (10.0)	4 (7.4)	1 (20.0)	2 (20.0)	11 (10.0)
50-59	8 (20.0)	6 (11.0)	1 (20.0)	-	15 (13.7)
60-69	10 (25.0)	22 (40.0)	2 (40.0)	-	34 (31.1)
70-79	8 (20.0)	12 (22.0)	-	-	20 (17.4)
80+	2 (5.0)	8 (14.8)	-	-	10 (9.1)
Totals	40	54	5	10	109

* Entries in the main body of Table 10 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 11

Distribution of Degree of Severity of speech/language disorders by sex groups for patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Degree of Severity	Male patients	Female patients	Combined
Mild	14 (23.3)*	11 (22.4)	25 (22.9)
Moderate	28 (46.6)	22 (44.8)	50 (45.8)
Severe	18 (30.0)	16 (32.6)	34 (31.1)
Totals	60	49	109

* Entries in the main body of Table 10 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 12

Distribution of Degree of Severity of speech/language disorders by sex groups for patients referred to the speech/language therapist between June 1976 and May 1977.

Degree of Severity	Male patients	Female patients	Combined
Mild	22 (42.3)*	21 (29.1)	43 (34.6)
Moderate	20 (38.4)	27 (37.5)	47 (37.9)
Severed	10 (19.2)	24 (33.3)	34 (27.4)
Total	52	72	124

* Entries in the main body of Table 12 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 13

Distribution of Degree of Severity by Age in patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Age Groups	Degree of Severity		
	Mild	Moderate	Severe
18-29	5 (20.0)*	3 (6.0)	1 (2.9)
30-39	3 (12.0)	6 (12.0)	1 (2.9)
40-49	3 (12.0)	4 (8.0)	4 (11.7)
50-59	7 (28.0)	4 (8.0)	4 (11.7)
60-69	4 (16.0)	18 (36.0)	12 (35.2)
70-79	3 (12.0)	9 (18.0)	8 (23.5)
80+	-	6 (12.0)	4 (11.7)
Totals	25	50	34

* Entries in the main body of Table 12 are frequences, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 14

Distribution of Degree of Severity of speech/language disorder by socio-economic level - Upper (1, 2 or 3) and Lower (4, 5 or 6) categories for patients with definable speech/language disorders in the three Christchurch public hospitals during the June Survey 1977.

Degree of Severity	Upper SES (1, 2 or 3)	Lower SES (4, 5 or 6)	Unknown
Mild	10 (32.2)*	13 (21.6)	2 (11.1)
Moderate	12 (38.7)	31 (51.6)	7 (38.8)
Severe	9 (29.0)	16 (26.6)	9 (50.0)
Totals	31	60	18

* Entries in the main body of Table 13 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

referred to the hospital speech/language therapists, not all of these persons were in-patients.

(2) Sex and speech/language disorders

While there were more male than female patients in the three hospitals during the June survey, the proportion of patients in the survey group with definable speech/language disorders was approximately the same for both sexes. There were more speech impaired females 72 (56%) than males 52 (41.9%) referred to the hospital speech/language therapists during the twelve month period prior to the survey.

(3) Age and speech/language disorders

For both the survey group and the referral group there was a higher rate of speech impairment in the 50-79 year age group.

(4) SES and speech/language disorders

While there were slightly more Lower SES patients with disorders in the survey group (probably a reflection of SES bias in public hospital admissions), SES level did not appear to have much effect on the distribution of disorders, with the following exceptions: more Upper SES patients with disorders of Speech and more Lower SES patients with disorders of Rhythm. However, there was no information available on SES for the referral group.

(5) Etiology and speech/language disorders

In both the survey group and the referral group, cerebral vascular accident was the most common cause of a speech/language disorder.

(6) Type of speech/language disorder

For both the survey and referral groups, language disorders occurred more frequently than Speech, Voice or Rhythm disorders. At the same time there were two obvious differences between the survey and referral groups, viz., (a) there was a high frequency of Voice disorders in the referral data (a disproportionate number of the speech impaired in the referral group had voice disorders, while the survey group contained towards the lower end of the percentage usually reported in the literature); and (b) there was a considerable difference in the frequency of disorders of Rhythm, in the two groups.

(7) Degree of severity of speech/language disorders

For the survey group, the distribution was approximately the same for both sexes - with the majority of cases being classified as either moderate or severe. More mild cases, however, were evident in the referral group.

CONCLUSION

At the time of the study there were two full-time and one part-time speech/language therapists employed by the North Canterbury Hospital Board to work with the speech impaired population in the entire Board area. It should be noted that there are eight public hospitals, as well as a number of private hospitals in Christchurch, which service a population of 325,000. The results from this study suggest that the 'real need' for speech/language therapy services for adults could not be met by the existing

services for a number of reasons.

The first point to note is that while observers identified 109 adult patients with definable speech/language disorders during the month of June 1977, the total number of speech impaired adults referred to the hospital speech/language therapists during the previous twelve months was only 124, with an average of ten persons per month being referred. While acknowledging that some of the speech impaired adults screened in the June survey were long-term patients, it is certain that the majority of them were not. In order to clarify this point it seems relevant to comment that during the June survey, one per cent of the total adult population presented with disorders of Rhythm (stutters) while for the previous twelve months not one patient who was resident in the three hospitals was referred to the speech/language therapist with a stutter (the three cases in the data were all referred from an outside source). The percentage of stutterers found in the June survey is similar to that reported by Milisen (1971) and Perkins (1978). In other words, it seems probable that there are always some patients with stutters in the three public hospitals, but because the disorder is not generally associated with a medical condition, doctors do not refer them to the speech/language therapist. It would appear that the 'needs' of stutterers within the context of the hospital are largely ignored, and while not all of these speech impaired adults would wish to receive therapy, it seems likely that many of them would if it was freely available. To sum up, it seems probable that a considerable number of speech impaired adult patients in the three public hospitals

are not referred to the hospital speech/language therapists either because their disorders are not recognised or considered relevant, or medical personnel are unaware of the service available to their speech impaired patients. In either case, better communication between medical staff and speech/language therapists would appear to be essential if the 'needs' of hospitalized speech impaired adults are to be met.

If 10 per cent of the possible adult patient population of approximately 1,000 are in need of the services of a speech/language therapist, the current need for therapists can be calculated by estimating the total number of speech impaired adults who spend time in hospital during the course of one year. If the average length of stay in hospital is six weeks, this means that there are nine speech impaired adults per bed. Therefore as 109 speech impaired persons were identified in June 1977, the cumulative figure for one year would be 981. During the previous twelve months, 2½ speech/language therapists had treated approximately 120 speech impaired adults. Thus the approximate case load per therapist was 50. In order to cater for the increased case load revealed by this survey, an extra 19-20 therapists would be required, if present case loads were maintained. Taking into account the current economic realities in New Zealand, as well as the likelihood that not all the speech impaired hospital patients would either want to receive therapy or benefit from it (and the cumulative effect of an intensified service), a reasonable estimate of the number of speech/language therapists

required would be 10. This considerable increase in the number of therapists in the public hospitals could be extended gradually so that the effects of the improved service could be monitored and the demands for service periodically adjusted.

CHAPTER 5

STUDY 2: INCIDENCE OF SPEECH/LANGUAGE DISORDERS AMONG THE PATIENTS SEEN BY A SAMPLE OF DOCTORS

In Study 1 it was concluded that medical practitioners have a significant role to play in the recognition of persons with speech/language disorders and in the subsequent referral and treatment of these patients by a qualified speech/language therapist. In the three public hospitals surveyed, limited facilities were available to patients with a speech/language disorder arising from a medical condition (e.g. head injuries, 'stroke', degenerative disease of the CNS or disease of the speech organs). However, where treatment was available it was likely to be terminated either when the patient was discharged from hospital or shortly after. The patient's continued 'need' for therapy was seldom considered in such discharges, and no community based speech/language therapy service seemed to be available.

It was assumed that former hospital patients who had suffered from medical conditions which had resulted in a speech/language disorder would be under the care of a general practitioner. Thus a sample of general practitioners should be able to identify these patients as well as others among their case load, who had non-medically related speech/language disorders such as a stutter. It is probable that this latter type of disorder would seldom be referred to a hospital based speech/language therapist in the absence of

any associated medical condition. The purpose of Study 2 was to survey the incidence of speech/language disorder among the adult patient population of a cross-section of general practitioners. In particular, an attempt was made to find out how many adult patients consulting their general practitioner during the month of June could be identified by their doctors as having a definable speech/language disorder and might benefit from a community based speech/language therapy service. In addition it was decided to include one of the Ear, Nose and Throat (ENT) specialists working in the city because of the specialized nature of their work with patients who are likely to develop speech and voice disorders, and finally doctors in the University of Canterbury Student Health Service.

SUBJECTS

The population surveyed included all the adult patients consulting doctors in general practice and the University of Canterbury Health Service, as well as one ENT specialist during one calendar month. The sampling procedure adopted in this study was to divide metropolitan Christchurch into seven geographical areas (A, B, C, D, E, F and G) and to approach a medical centre or group practice in each area. Since some zones had much larger and denser populations than others, the numbers of doctors participating was varied from area to area to reflect these differences in population. None of the medical centres approached declined to participate in the study. Several doctors, however, were unable to screen their patients either because they were absent from their practice during the survey period or they

were unable or unwilling to take time from normal duties. H indicates the clients of the University of Canterbury Student Health Service and I a Christchurch city ENT specialist.

Table 15 shows the estimated case load of the participating doctors, and both the reported incidence and the estimated incidence of speech impaired patients for one calendar month. The case loads had to be estimated because general practitioners do not officially record the age or sex of patients. The estimate was based on the results of a survey carried out by the Health Department in July 1976. This survey indicated that for a sample of 10 average general practitioners, 24.03 per cent of the claims made to the Health Department were for children under the age of 16 years or young persons for whom the family benefit was still payable. It was decided on the basis of this data that 24 per cent represented the best estimate of the total patient load which should be deduced as non-adult.

Information was also obtained from the same source about the average number of consultations for each general practitioner participating in the survey. Unfortunately, at the time of the survey (June 1977) no information was available regarding the male/female ratio of patients consulting doctors.

The data from the medical centres was collected in June 1977, from the University Student Health Centre in July 1977 and the ENT specialist in August 1977. They were all winter months and it seems highly unlikely that the differences in times when the data were collected would have had a sizable effect on the results obtained.

Table 15

Distributions of participating Medical Centres and doctors, with reported speech/language disorders, and individual doctor's estimates of the average number of speech impaired adults who consult doctors in one calendar month.

Medical Centre	Doctor	Average number of adult patients	Reported incidence	Individual doctor's estimates of speech impaired patients seen per month	
				Frequency	Percentage of case load
A	1	1 292	- -	0-1	0.08
	2	760	3 (0.40)	10	1.31
B	3	570	- -	0-1	0.18
	4	608	5 (0.82)	10	1.65
	5	760	- -	0-1	0.13
C	6	456	- -	0-1	0.21
	7	684	- -	1-2	0.30
	8	380	- -	1-2	0.53
	9	46	- -	0-1	2.20
D	10	780	33 (0.40)	4	0.52
	11	784	3 (0.43)	3	0.43
	12	760	- -	2	0.30
E	13	380	1 (0.30)	2	0.52
	14	760	- -	1	0.13
	15	532	- -	1	0.20
	16	152	3 (2.0)	0-1	0.70
F	17	608	- -	0-2	0.32
	18	684	1 (0.15)	0-6	0.90
	19	532	3 (0.40)	3	0.60
	20	608	- -	4	0.70
	21	608	- -	1	0.16
G	22	418	2 (0.50)	0-1	0.23
	23	380	- -	5	0.31
	24	851	- -	0-2	0.23
	25	760	2 (0.30)	0-2	0.30
	26	418	- -	0-1	0.23
H	27	342	1 (0.30)	0-1	0.30
	28	456	- -	0-1	0.21
	29	342	- -	0-1	0.30
	30	228	- -	0-1	0.43
TOTAL		17 251	27 (0.15)	74*	0.42
I (ENT)	31	304	20 (6.6)	30-40	13.15
TOTAL		17 555	47 (0.26)	114	0.64

* Added the highest figure.

INSTRUMENTS AND PROCEDURE

Initial contact with the general practitioners was made through the Secretary of the General Practitioners' Association. The topic was subsequently introduced at the next meeting of the Association, and reported in its monthly newsletter. Several days after the newsletter item, one medical centre in each geographical area was contacted. The senior doctor in each practice was briefed about the purpose of the survey and about the procedures to be adopted. It was feasible to insist upon a standard interview form because doctors' primary area of concern must always be the presenting medical problem, not the identification of speech pathology. Therefore each doctor was provided with details of the four main types of speech impairment (Appendix A) and a supply of SLI forms (the SLI was described in detail in Study 1). The doctors were requested to screen all their adult patients by listening critically to the speech sample provided by their patients in the context of the normal consultation procedures, and to complete a SLI for every patient judged by them to have a speech/language disorder.

In order to save time, only one doctor in each practice was personally briefed and it was his/her task to explain to his/her colleagues the purpose and method of screening used. The doctors were asked to refer any problems to the investigator. Unfortunately, the investigator noted a difference between the doctors who personally received instructions and those who received instructions from their colleagues. The doctors who had personal contact with the investigator reported that a higher percentage of their

patients had definable speech/language disorders than the others. This seems to suggest that the doctors who had personal contact with the investigator may have been more aware of the requirements of the study.

Personal contact was made with the doctor in charge of the Student Health and Counselling Service (H) and the ENT specialist (I). They were provided with identical information and instructions as the general practitioners.

In order to get some information on the reliability of the doctors' screenings, each participating doctor was requested to complete a brief follow-up questionnnaire (Appendix B). The doctors were required to make two estimates. The first pertaining to the number of consultations per month, and the second with regard to the incidence of speech/language disorders among their patients. This questionnaire was posted to all the doctors practising in medical centres, in July 1977, the University doctors received theirs in August, and the ENT specialist in September (N = 31). All doctors replied.

RESULTS AND DISCUSSION

Incidence Data: Total Patient Groups

The total adult patient population seen by the general practitioners and the ENT specialist over a period of one month was 17,555, and 47 (0.26%) were identified as having noticeable speech/language disorders. Details on the distribution of the speech impaired adults in the nine locations are presented in Table 15. It can be seen that there were considerable differences between individual

Table 16

Frequency and incidence of speech/language disorders among the adult patients of the 11 'active participant' doctors in the June 1977 Survey.

Doctor	Estimate of average adult consultations	Number of speech disordered patients identified in June	Estimate of number of speech disordered patients seen per typical month
1	760	3	10
2	608	5	10
3	760	3	4
4	684	3	3
5	152	3	1
6	380	1	2
7	684	1	6
8	532	3	3
9	418	2	1
10	760	2	2
11	342	1	1
Totals	6 080	27 (0.44%)	43 (0.7%)

Table 17

Distribution of doctors in terms of the extent to which they believed they may have 'forgotten' to listen for speech/language disorders among their patients during the month of June 1977.

Medical Centre	Doctors' Responses: Most probably	Possibly	Most unlikely	Total number of doctors
A	1	1	-	2
B	2	-	1	3
C	-	2	2	4
D	1	-	2	3
E	1	2	1	4
F	2	1	2	5
G	3	2	-	5
H	1	-	3	4
I	-	-	1	1
Totals	11 (35.4)*	8 (25.8)	12 (38.7)	31 (100)

* Entries in parentheses are percentages of the total group of doctors (N = 31).

Table 18

Distribution of doctors in terms of the extent to which they believed they may have 'failed to recognize' speech/language disorders in their patients during the month of June 1977.

Medical Centre	Doctors' Responses: Most probably	Possibly	Most unlikely	Total number of doctors
A	-	1	1	2
B	-	-	3	3
C	-	-	4	4
D	-	-	3	3
E	1	3	-	4
F	-	-	5	5
G	1	3	1	5
H	1	-	3	4
I	-	-	1	1
Totals	3 (9.7)*	7 (22.5)	21 (67.7)	31 (100)

* Entries in parentheses are percentages of the total group of doctors (N = 31).

doctors. Nineteen (61.2%) reported no adults with speech impairment, while doctor B4 reported 5 (0.82%), and a total of 20 (6.6%) of the ENT specialist's patients had speech/language disorders. The variability in incidence rates can be attributed to a number of factors. From Table 17 it can be seen that 19 (61.2%) of the doctors stated that they may have forgotten to listen for speech/ language disorders during the survey period. This means that over half of the doctors failed to participate actively in the survey, and consequently were not able to identify a speech/language disorder in any one of their patients (Table 18). If the incidence rate is calculated using only those 11 general practitioners who stated that they had participated actively, it can be seen from Table 16 that the total number of adult patients screened was 6080, of whom 27 (0.44%) were found to have a definable speech/language disorder. These same eleven doctors estimated that they normally see a total of 43 speech impaired adults in one calendar month, which gives an estimated incidence rate of 0.7% (Table 16).

The ENT specialist identified 20 (6.6%) speech impaired adults among the 304 who consulted him in one month. This higher percentage compared with general practitioners is almost certainly a direct function of the specialised nature of his work (e.g. likely receipt of patients who already have some problems with the organs of speech production). While the ENT specialist did identify 20 speech impaired adults in the survey, he estimated that the usual number would be about 40. He told the writer that he sometimes forgot to record the speech impaired adults during

the survey because he had left the SLI forms either at the hospital or in his rooms when he was in the other place.

In summary, in light of the fact that only 11 general practitioners and the ENT specialist did in fact carry out anything like a systematic survey and even they, for reasons discussed, probably overlooked some of their speech impaired patients, the overall incidence rate of 0.26 per cent would be a very conservative estimate of speech impairment among the doctors' patient populations.

The distribution of males and females with Speech/Language Disorders

Information on the proportions of male and female patients who typically consult the medical personnel involved in this study was not available. In the absence of such information it seems reasonable to suppose that similar numbers of men and women consulted their general practitioners during the month of June 1977. When the total group of speech impaired adults recognised by general practitioners is examined, however, it is noticeable that 18 (66.6%) were males and 9 (33.3%) were females (Table 19). Details about the speech impaired patients who consulted the ENT specialist are presented in Table 20. There were 14 (70%) males and 6 (30%) females. These two independent sources of information indicate that the proportion of males to females among those identified as having speech/language problems was 2 to 1.

Distribution of Age among the Speech Impaired Population

The age distributions of those patients who were

Table 19

Study 2: Distribution of Age/Sex for patients with speech/language disorders, who consulted the participating general practitioners in June 1977.

Age Group	Male patients	Female patients	Combined
18-29	6 (33.3)*	1 (11.1)	7 (25.9)
30-39	2 (11.2)	-	2 (7.4)
40-49	4 (22.2)	-	4 (14.8)
50-59	1 (5.5)	-	1 (3.7)
60-69	4 (22.2)	4 (44.4)	8 (29.6)
70-79	1 (5.5)	2 (22.2)	3 (11.1)
80+		2 (22.2)	2 (7.4)
Totals	18	9	27

* Entries in the main body of Table 19 are frequencies, while the entries in parentheses are percentages based on the total number of subjects in each column.

Table 20

Distribution by Age/Sex for patients with speech/language disorders, who consulted the ENT specialist in August 1977.

Age Group	Male patients	Female patients	Combined
18-29	2 (14.2)*	-	2 (10.0)
30-39	1 (7.1)	-	1 (5.0)
40-49	2 (14.2)	-	2 (10.0)
50-59	4 (28.5)	4 (66.6)	8 (40.0)
60-69	1 (7.1)	1 (16.6)	2 (10.0)
70-79	4 (28.5)	1 (16.6)	5 (25.0)
80+	-	-	-
Totals	14	6	20

*Entries in the main body of Table 20 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

identified as having speech impairment are presented in Tables 19 and 20. It is apparent that in both sets of data there were more males in the younger age groups and more females in the older age groups. The possible reason for this type of age distribution could be related to the type of disorder, and this will be considered in a subsequent section.

Distribution of SES for the Speech Impaired Population

All the males and females screened in the June survey 1977 were subdivided into two broad categories in terms of their occupations (males) or their husband's occupation (females). Those classified in the first three SES categories on the Elley and Irving Scale (1976) were termed Lower SES. The distribution of the speech impaired patients identified by the general practitioners and the ENT specialist are presented in Tables 21 and 22. It can be seen that approximately one quarter of the speech impaired population in both sets of data were classified in the Upper SES level and more than 70 per cent in the Lower SES level. As in Study 1, the proportions of speech impaired persons in the Lower SES level is larger than is found in the general population (Elley and Irving, 1976). It is possible that this distribution reflects the SES distribution of persons consulting a general practitioner. Moreover, all the females were in the lower SES level.

It is interesting to note that the proportion of stutterers in the Upper SES level is higher than in the Lower SES level. This differs from the claims made by other

Table 21

Distribution by Type of Disorder and Socio-economic Status (SES) of adult patients identified as having speech/language disorders by the participating doctors in June 1977.

Type of Disorder	Upper SES (1, 2 or 3)[a]	Lower SES (4, 5 or 6)[a]
Speech	1 (16.6)*	10 (47.6)
Language	-	5 (23.8)
Voice	1 (16.6)	-
Rhythm	4 (66.6)	6 (28.5)
Totals	6 (22.2)	21 (77.7)

* Figures in parentheses are percentages of the total speech impaired group (N = 27).

[a] Elley/Irving's (1976 and 1977) Scales.

Table 22

Distribution by Type of Disorder and Socio-economic Status (SES) of adult patients with definable speech/language disorders, who consulted the ENT specialist during the Survey 1977.

Type of Disorder	Upper SES	Lower SES	Unknown[b]	Combined
Speech	-	1	3	4 (20.0)*
Language	-	-	-	-
Voice	4	9	3	16 (80.0)
Rhythm	-	-	-	-
Totals	4 (20.0)	10 (50.0)	6 (30.0)	20 (100)

[a] Elley/Irving's (1967 and 1977) Scales.

[b] SES levels for all females were 'Unknown'.

* Entries in the main body of Table 22 are frequencies, while the entries in parentheses are percentages based on the total number of subjects who consulted the ENT specialist (N = 20).

researchers that stuttering occurs equally frequently across socio-economic levels (Sheehan and Kilburn, 1968; Sheehan, 1970).

Distribution of Etiological Factors among the Speech Impaired Adults

The details of etiological factors associated with the speech/language disordered patients for separate sex groups are presented in Table 23. The largest number of speech impaired adults were classified as having no apparent medical basis for their speech problem. According to Perkins (1978), a stutter, a minor articulation substitution (f for th), or a language developmental problem are the only types of speech/language disorders that are not associated with some medical etiology in adults. It is unlikely that general practitioners would identify a minor articulation problem (Milisen, 1971) and the ten adults classified as having no apparent medical cause were all stutterers (Table 23). According to Milisen (1971), the proportion of the speech impaired population with stutterers is between 5-15 per cent. The number reported by general practitioners was 37 per cent. The reasons for this relatively large proportion of stutterers could be a failure by general practitioners to identify other categories of disorder. Evidence for this possibility can be found in their responses to the open-ended question at the conclusion of the brief follow-up questionnaire (Appendix B). A number of the doctors were unaware that speech/language therapy could be effective with 'stroke' patients and for this reason they failed to include them in their data. It is also possible

Table 23

Distribution by Sex of probable Etiological factors in patients with definable speech/language disorders, who consulted participating doctors in the month of June 1977.

Cause of disorder	Male patients	Female patients	Combined
Cerebral vascular accident	4 (22.2)*	4 (44.4)	8 (29.6)
Head injury	2 (11.1)	-	2 (7.4)
Degenerative disease of CNS	1 (5.5)	2 (22.2)	3 (11.1)
Disease/misuse of organs of head/neck	-	1 (11.2)	1 (3.7)
Congenital condition	2 (11.1)	-	2 (7.4)
No apparent medical basis	8 (44.4)	2 (22.2)	10 (37.0)
Unknown	1 (5.5)	-	1 (3.7)
Totals	18	9	27

* Entries in the main body of Table 23 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

that a stutter would be more obvious to a doctor during the consultation period than the other types of disorders. The patient with a stutter would have problems explaining his/her symptoms in the very short time available for the average consultation.

Although some doctors failed to report 'stroke patients, cerebral vascular accident was the next most frequent etiological factor for both males and females.

The speech impaired patients who consulted the ENT specialist were all classified in the category Disease/Misuse of the organs of head/neck. This is a reflection of the highly specialised nature of the ENT specialist's work. In brief, the task of the ENT specialist is to examine patients who have problems swallowing, chronic laryngitis, hoarseness etc., and to recommend treatment and/or surgery. All of these problems can affect the voice.

Distribution of the Types of Disorder in Speech Impaired Adults

The four types of speech/language disorders as they were distributed among the speech impaired patient population who consulted general practitioners during the month of June 1977 are presented in Table 24. The proportion of female patients with disorders in categories 1 and 2 (Speech and Language) was slightly higher than for males. This may be related to the fact that speech impairment as a consequence of medical etiology tends to increase with advancing years (Health Department Report, 1975; NINDS, 1970). It can be seen on Table 19 that the majority of females in this group of speech impaired adults

Table 24

Distribution by Types of Disorders and Sex groups of Patients with definable speech/language disorders who consulted participating doctors in the month of June 1977.

Type of Disorder	Male patients	Female patients	Combined
Speech	7 (38.8)*	4 (44.4)	11 (40.7)
Language	3 (16.6)	2 (22.2)	5 (18.5)
Voice	1 (5.5)	-	1 (3.7)
Rhythm	7 (38.8)	3 (33.3)	10 (37.0)
Totals	18	9	27

* Entries in the main body of Table 24 are frequencies, while the entries in parentheses are percentages based on the total number of subjects in each column.

were over sixty years of age, while one third of the males were under thirty and were identified as having disorders of Rhythm. This type of disorder tends to decrease as a function of age (Perkins, 1978).

The proportion of adult patients with disorders of Rhythm was larger than has been found in other studies (Milisen, 1971). There are two possible reasons for this. Firstly, most general practitioners have high patient loadings and have a limited time in which to communicate with patients. This pressure of time is likely to accentuate a stutter for both the patient and the doctor. Secondly, it seems likely that a number of adults with medically based disorders were not recorded because the doctor had adpted to, and accepted the patient's language disorder, or come to regard it as unmodifiable.

In general, it would appear that the difference between the distribution of types of disorders found in this study and the pattern found in previous studies is explicable in terms of the conditions under which general practitioners work and their expectations regarding speech/language therapy.

The patients who consulted the ENT specialist showed primarily disorders of voice due to disease/misuse of the larynx or problems with speech as a result of pathology of the mouth and tongue (Table 22).

Distribution of Speech/Language Disorders in Terms of Degree of Severity

The relationship between the degree of severity of the problem and sex of the speech impaired patients is

Table 25

Distribution by Degree of Severity of speech/language disorders and Sex groups, of patients with definable speech/language disorders who consulted participating doctors in the month of June 1977.

Degree of Severity	Male patients	Female patients	Combined
Mild	6 (33.3)*	2 (22.2)	8 (29.6)
Moderate	9 (50.0)	2 (22.2)	11 (40.7)
Severe	3 (16.6)	5 (55.5)	8 (29.6)
Totals	18	9	27

* Entries in the main body of Table 25 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 26

Distribution by Degree of Severity of speech/language disorders and Sex groups of patients with definable speech/language disorders who consulted the participating ENT specialist in the Survey 1977.

Degree of Severity	Male patients	Female patients	Combined
Mild	6 (42.8)*	4 (66.6)	10 (50.0)
Moderate	5 (35.7)	2 (33.3)	7 (35.0)
Severe	3 (21.4)	-	3 (15.0)
Totals	14	6	20

* Entries in the main body of Table 26 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

presented in Tables 25 and 26. It is noticeable that a larger proportion of the patients seen by the ENT specialist showed mild disorders than was the case with those seen by general practitioners. The majority of the patients consulting general practitioners showed either mild or moderate impairment. There were few severe cases in either group.

SUMMARY OF MAIN FINDINGS

(1) General

Among the adult patients (N = 6,080) seen by the 11 general practitioners who attempted to carry out a systematic screening of their patients, 0.44 per cent presented with a discernible degree of speech/language impairment which would probably benefit from the services of a speech/language therapist.

(2) Sex

There were more speech impaired males than females.

(3) Age

The incidence of patients with speech/language disorders was greatest between the ages of 50-69 years.

(4) SES

Lower SES patients were over-represented in the speech impaired populations.

(5) Etiology

Most of the speech/language problems identified by general practitioners were classified as having either no

apparent medical basis or as being caused by cerebral vascular accident. On the other hand, problems which derived from disease/misuse of the organs of the head/neck were the most common for the patients seen by the ENT specialist.

(6) Type of Disorder

The proportions of disorders of Rhythm were higher than has been found by other researchers probably because of the special conditions within the consulting situation. The higher proportion of disorders of Voice identified by the ENT specialist may be because he deals exclusively with the types of medical conditions which are related to Voice disorders.

(7) Severity

There were more mild and moderate diseases than severe disorders.

CONCLUSION

At present no public speech/language therapy services are available for speech impaired adults resident in the general community. While limited therapy services are available for some hospital patients, the number of therapists employed is clearly insufficient to accommodate the speech therapy 'needs' of speech impaired adults who have been discharged from hospital (if their impairment was the result of a medical condition). While the results of Study 2 suggest that the incidence of speech impairment among the adult patient population of general practitioners is not high, there is reason to suspect that the recognition

of a speech/language defect was under-reported in some categories - especially those related to cerebral vascular accident or degenerative disease of the CNS. Considerable problems were encountered in the execution of this study and these have contributed to the reported low incidence of speech/language disorders. The use of untrained observers (clearly necessary in view of the objectives of the study) seems to have resulted in a selection bias viz., the over-representation of stutterers and the under-representation of aphasics, in comparison with the incidence estimates reported by other researchers.

A second problem concerns the validity of the data. It appears that only 11 of the observers 'actively participated' in the study, and these doctors reported 0.44 per cent incidence and estimated that the average monthly incidence was approximately 0.7 per cent (Table 16). On this basis, a reasonable estimate of the frequency of speech impaired adults among doctors' patients would be 0.5 per cent. The average general practitioner in the sample saw approximately 552 adult patients per month (Table 14). This means that about 3-4 of these patients would have definable speech/language disorders which would benefit from assessment and treatment by a qualified speech/language therapist.

If it is assumed that the results of these 11 doctors represent the results that would be obtained from the 100 doctors working in the Christchurch metropolitan area, the number of doctors' patients requiring the services of a speech/language therapist during any one calendar month would be approximately 300 adults. On the basis of the

survey data, 100 of the 300 speech impaired adults would be the consequence of a head injury or CVA, while another 100 would be stutterers and the remaining group miscellaneous speech/language problems. It is necessary to take account of the fact that general practitioners see the same patients periodically over a period of time, therefore if it is assumed that 20 per cent of the CVA/accident group were new cases and the remaining 80 per cent patients on their second or subsequent visits, this would mean that the annual total of new CVA cases would be 240. Using the estimates suggested by Quirk (1972) of one therapist per 20 patients for a period of six months treatment, a total of six therapists each treating 40 cases per year would be required. Moreover, as the majority of stutterers were male and apparently the frequency of visits to doctors is less for males than females, the relative frequency of new cases of stuttering per month is probably higher than for CVA/accident patients. A reasonable stimate of the percentage of new cases per month would be 40 per cent, which translates into 40 new cases per month or 480 each year. If the average length of treatment was 6 months, one therapist could treat 200 stutterers per year, making a total of 2½ therapists needed to work with stutters. It must be remembered, however, that this population is not constantly being renewed like CVA/accident cases, therefore, once intensive therapy programmes have been in progress for some time, the incidence of stuttering should decrease and therefore less therapists would be required. The remaining 100 speech impaired adults seen by general practitioners in the course of one year would require about 1½ therapists. Thus the

current need for speech/language therapists to work in the context of the community is 11.

The results obtained from the ENT specialist are more difficult to interpret. The patients reported by this specialist will have been seen and referred through a general practitioner, so that there is some overlap between the results obtained from the ENT specialist and the general practitioners. However, the disorders reported by the ENT specialist are generally different from those reported by the general practitioners, suggesting that the ENT specialist was sensitive to different kinds of speech problems.

Assuming that most of the problems identified by the ENT specialist are of the kind that a general practitioner would not identify, then the estimate obtained for the specialist should be added to the results obtained for general practitioners. If it is also assumed that the other two ENT specialists in Christchurch would identify the same number of speech problems among their patients, then the total number seen by ENT specialists is probably 60 per calendar month. In addition, such specialists as plastic surgeons and psychiatrists may have some patients who require speech therapy services. An estimated 700-800 speech impaired adults per year seems reasonaable; this number would require 4 speech/language therapists. However, it should be noted that the ENT specialist has access to the hospital speech/language clinic. In fact a considerable proportion of the speech/language therapist's case load in 1976-1977 consisted of such cases and this was accounted for when estimating the need for therapists to work in the

public hospital system, and consequently will not be duplicated here.

CHAPTER 6

STUDY 3: INCIDENCE OF SPEECH/LANGUAGE DISORDERS AMONG ADULTS IN CONTACT WITH SOCIAL SERVICE AGENCIES

Study 1 and Study 2 focussed upon adults in medical environments because it was known that the incidence of speech pathology in the adult population is often associated with medical problems (Health Department Report, 1975; Milisen, 1971; NINDS, 1970; Quirk, 1972). Study 3 was concerned with another population which could be considered "at risk' viz., adults who were in contact with social workers and a psychologist because of some kind of adjustment problem. The possibility was examined that a proportion of adults with various personal difficulties may have associated and remediable speech disorders (e.g. a stutter or a voice disorder, as suggested by Eldridge, 1968).

SUBJECTS

The subjects in Study 3 were the clients/residents of six different agencies/institutions for persons with special needs in metropolitan Christchurch. The first agency (C1), the Salvation Army Emergency Lodge, provides counselling and accommodation for women who have experienced some kind of personal trauma. The clients tend to be from Lower SES backgrounds (categories 4, 5 or 6 on the Elley/Irving, 1976, 1977 Scales) and many of them have literacy problems. The second agency (C2), the Christchurch City Mission, catered

for both male and female clients, accommodation for the homeless (short term), child minding facilities for solo parents, and second-hand shopping facilities. The third agency (C3, the Presbyterian Social Service, provides a counselling service. The clients sampled for this study came from the Upper SES levels (categories 1, 2 or 3) on the Elley/Irving, 1976 and 1977 Scales. The fourth agency (C4) was a geriatric home which provides both residential and hospital care. The fifth agency (C5) was an assessment and referral unit for persons with drug and alcohol related problems. The clients came from all SES levels. The sixth group were drawn from a male prison (C6) and consisted of all inmates who had been sentenced to terms of six months or more during October 1977. Most of the inmates came from Lower SES backgrounds.

The distribution of subjects for this study is presented in Table 27. It can be seen that a total of 517 persons were screened for definable speech/language disorders. This group included adult persons from both sexes, from all SES levels, with an age range of 18-97 years inclusive. For discussion purposes, three were identified:

Population A - Social Service Agency Clients (C1, C2, C3 and C5), 446 adults screened.

Population B - Geriatric home residents (C4) 46 adults screened; and

Population C - Male prison inmates (C6), 25 prisoners screened.

Table 27

Distribution of clients/residents in six social service agencies/ institutions, and the incidence of discernible speech/language disorders.

Source	Number of clients screened	Number of adults with speech/language disorder
C1	132	-
C2	123	2 (1.6)*
C3	140	7 (5.0)
C4	46	20[a] (43.4)
C5	51	2 (3.9)
C6	25	7 (7.3)
Totals	517	38 (7.3)

C1 = Salvation Army Emergency Lodge
C2 = Christchurch City Mission
C3 = Presbyterian Social Service
C4 = Presbyterian Geriatric Home
C5 = National Society on Alcoholism and Drug Dependency
C6 = Psychological Services - Department of Justice.

[a] This figure includes 3 persons with a hearing loss. If these are omitted, the figures are 17 (36.9).

* Entries in the main body of Table 27 are frequencies, while the entries in parentheses are the percentage of the screened population with speech impairment.

INSTRUMENTS AND PROCEDURE

Initially, contact had been made with eight social service agencies by means of an introductory letter, followed by a telephone call in order to arrange a suitable time for a personal meeting with all the observers. At this point two agencies declined to participate. The first because the supervisor was hospitalised when the initial contact was made and it was thought that there would not be sufficient time to organise a survey when the supervisor returned. The second agency claimed that none of their clients had speech/language disorders.

Conversational speech within the context of an interview with an observer was the primary method of identifying speech impairment. The SLI (described in Study 1) was the only instrument used in this study. A training session in the use of the SLI was arranged for each of the eight social workers involved with the agencies (C1, C2, C3 and C5). All social workers employed in these agencies readily agreed to participate in the study. In population A, all clients interviewed or seen by these eight social workers during the normal course of their work, during one calendar month (August 1977), were screened for the presence of any speech/language disorder. The residents in the geriatric home were screened by a trained observer on the afternoon (2.00 - 4.00) of August 23rd 1977. The procedure adopted was the same as Study 1 (Appendix A). The prison sample (Population C) was screened by the Senior Psychologist employed by the Department of Justice, in the course of his routine assessment of all new prisoners sentenced to six months or more during the month of October

1977. The investigator spent two separate half hour sessions with the Senior Psychologist and trained him in the use of the SLI. All new prisoners are examined on a number of dimensions during 'Classification' meetings as part of normal prison routine and it was apparently not difficult to include a speech/language assessment in such meetings.

RESULTS AND DISCUSSION

From the total adult client population of the six different agencies, 517 adults were screened for speech/language disorders and of this group a total of 38 (7.3%) were found to have some form of communication difficulty. Details on the incidence of speech/language disorders in each agency are presented in Table 27. In Population A (C1-3 and C5) a total of 446 adults were screened and of these 11 (2.4%) had identifiable speech/language disorders. In Population B, of the 46 geriatrics surveyed, 20 (43%) had some kind of communication problem, while in Population C, seven (28%) of the male offenders screened were classified as having some degree of speech/language impairment. The considerable differences in incidence rate between these groups no doubt reflect the substantial differences between the populations sampled. The average 2.4 per cent incidence rate for Population A is conservative compared with overseas estimates of the speech impairment among adult populations (Milisen, 1971; NINDS, 1970; Quirk, 1972).

The incidence of speech impairment for geriatric

Table 28

Number and per cent of nursing home residents by age and speech status in the United States, 1973-74.*

Speech Status	All ages	Under 65 yrs	65-74 yrs	75-84 yrs	85+
Number of Residents	1 074 500	114 200	162 900	384 000	413 000
Percentage Distribution					
Speech not impaired	74.3	58.6	70.7	76.2	78.2
Speech impaired	22.8	33.7	25.5	21.3	20.0
Speech completely lost	3.0	7.6	5.8	2.5	1.8

* Personal communication from Dr Kenneth Perrin - American Speech and Hearing Association, 10 August, 1977.

residents was higher than that reported by other studies of geriatric groups, for example Quirk (1972) reports a rate of 6-12 per cent. The results of an unpublished study of geriatric patients in the United States (Perrin, 1977) are presented in Table 28. The figures for the ages over 75 years were 21.3 per cent for impaired speech, with a further 2.5 per cent for speech totally lost. A variety of factors could be responsible for the discrepancy between the incidence rates reported in the literature and those obtained in the present study. In the present study, screenings were undertaken by a trained speech/language therapist using specified criteria. It is not clear who collated the data in the American study, however, it could have been an untrained observer and the criteria used are difficult to determine.

Distribution of male and female clients with speech/language disorders

The distribution of speech/language disorders among adult clients involved with social service agencies in Population A is complicated by the fact that the social workers failed to keep accurate records regarding the sex ratio of clients and by the fact that C1 deals exclusively with females (none of whom presented with speech/language disorders). It seems probable that the proportion of persons with disorders reflects the percentages from each sex seeking help - 6 (54.5%) males and 5 (45.4%) females. Among the geriatric population (Population B) one third (4) of the male geriatrics had a definable speech/language disorder, while slightly more than one third (38.2%) of

the females had some degree of impairment. Thus, in both populations A and B, there does not appear to be much difference between the sexes in the frequency of speech disorders shown.

Distribution of age for the speech/language impaired adults

The distribution of definable speech/language disorders by age for Population A is presented in Table 29. It is apparent that there is a somewhat higher proportion of females with speech/language disorders in the older age groups, while the reverse is true for males. Again, however, this could be a reflection of the age differences in the total client population. The relatively high frequency of speech/language disorders in the geriatric population compared with the incidence found among other social agencies suggests a general increase in incidence with age.

Distribution of etiology, type of disorder and degree of severity in speech impaired adults in contact with social agencies

The distribution of the types of speech/language disorders among the speech impaired client population for Population A by sex and degree of severity is presented in Table 30. It has been suggested in the literature (Eldridge, 1969; Moses, 1954; Perkins, 1978; Travis, 1971; Van Riper, 1971) that there appears to be a component of fear and anxiety in disorders of Voice and Rhythm, and it was these types of disorders that the investigator expected

Table 29

Distribution by Age and Sex for Clients with speech impairment in Population A Agencies (C1, C2, C3 and C5) in August 1977.

Age Group	Male Clients	Female Clients	Combined
18-29	2 (33.3)*	2 (40.0)	4 (36.3)
30-39	3 (50.0)	-	3 (27.2)
40-49	-	-	-
50-59	-	-	-
60-69	1 (16.6)	-	1 (9.0)
70-79	-	2 (40.0)	2 (18.1)
80+	-	1 (20.0)	1 (9.0)
Totals	6 (54.5)	5 (45.4)	11 (100)

* Entries in the main body of Table 29 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 30

Distribution by Types of Disorders, Sex groups and degree of Severity of the clients in Population A (C1, C2, C3 and C5) in August 1977.

Degree of Severity	Speech disorders Male Clients	Speech disorders Female Clients	Language disorders Male Clients	Language disorders Female Clients	Combined
Mild	1	1	2	1	5 (45.4)*
Moderate	-	-	3	2	5 (45.4)
Severe	-	-	-	1	1 (9.0)
Totals	1	1	5	4	11 (100)

* Entries in the main body of Table 30 are frequencies, while the entries in parentheses are percentages based on the number of clients with speech impairment (N = 11).

to find among persons with adjustment problems. However, it can be seen clearly that none of the clients in Population A was identified as having a disorder of Voice or Rhythm. There was no apparent difference between males and females with regard to the distribution of disorders, and almost all (90.8%) of the cases were classified as either mild or moderate. It is interesting to note that 9 (81.8%) of the speech impaired adults were classified in the 'Language' category, and only one male and one female had problems with articulation. The cause of the speech/language disorders was apparently different for each sex group. One male had been involved in a car accident and had suffered a head injury, another had sustained a cerebral vascular accident, while the remaining three were classified as developmental problems. Three of the females with language disorders had encountered a cerebral vascular accident, and one was due to developmental factors. In summary, the social agency clients in Population A with language disorders tended to fall into one of two groups: the first group consisted of young adults - primarily males with literacy problems, while the second group were older persons - mainly females who had experienced a cerebral vascular accident.

The distribution of types of disorders by sex groups and degree of severity for residents in a geriatric home are presented in Table 31. Cerebral vascular accident, resulting in either speech or language impairment, was the most frequent type of disorder in this population. There were no cases of Voice or Rhythm disorders, and degree of severity of impairment increased as a function of age.

Table 31

Distribution of Types of Disorders by Sex groups and degree of Severity for Geriatric home residents (C4) in the month of August 1977.

Degree of severity	Speech Disorders Geriatrics		Language Disorders Geriatrics		Combined
	Male	Female	Male	Female	Combined
Mild	2	-	-	3[a]	5 (29.4)*
Moderate	-	-	2	4	6 (35.2)
Severe	-	-	-	6	6 (35.2)
Totals	2	-	2	13	17 (100)

[a] 1 female had been referred to a speech/language therapist and believed that therapy had been beneficial.

* Entries in the main body of Table 31 are frequencies, while the entries in parentheses are percentages of the total number of geriatric residents with speech impairment (N = 17).

Table 32

Distribution of Types of Disorders by degree of Severity for Male Prisoners (Population C) in the month of October 1977.

Type of Disorder	Degree of Severity			
	Mild	Moderate	Severe	Combined
Speech	1	-	-	1
Language	-	4[a]	-	4
Voice	1	-	-	1
Rhythm	1	-	-	1
Totals	3		-	7

[a] Due to developmental factors.

The distribution of types of disorders by degree of severity for male prisoners is presented in Table 32. Over half of the speech impaired prisoners had language impairment due to developmental factors (e.g. mental retardation or culturally disadvantaged) and of the three remaining cases, one was classified in each category. While the developmentally based disorders may not be relevant to adult speech/language therapy services, the remaining three cases could benefit from therapy. The latter three cases represent 12 per cent of the prison sample and this would seem to suggest that there may be a considerable number of prisoners who could benefit from the services of a speech/language therapist.

SUMMARY OF MAIN FINDINGS

(1) General

From the clients of four community social agencies a total of 446 adult persons were screened, of whom 2.4 per cent had definable speech/language disorders. Among a population of 46 geriatrics, 36.9 per cent had some degree of speech/language impairment, and 12 per cent of a population of male prisoners presented with a definable speech/language disorder.

(2) Sex and Age

Due to the marked differences in the sub-populations sampled, it is not strictly possible to generalise about the differences. On the face of it, however, it does appear that speech/language disorders are rather more common in young males than females, but with increasing years the

proportion of females tends to increase.

(3) SES

There was no information regarding SES levels for the speech impaired in Populations A and B for specific persons, but all the speech impaired prisoners were in the Lower SES level (4, 5 or 6, Elley/Irving, 1976 Scale).

(4) Etiology

Cerebral vascular accidents were the most common cause of impaired speech/language in the older age ranges, with a large proportion of young males classified as having communication problems arising from developmental factors.

(5) Type of Disorder

Language disorders were the most frequent in the three populations. Among the male prisoners there was one Voice disorder, one Rhythm disorder and one articulation disorder.

(6) Degree of Severity

All the younger speech impaired clients were classified as either mild or moderate, while the geriatric residents were either moderate or severe.

CONCLUSION

The results of this study seem to suggest that approximately 2 per cent of community social agency clients have some degree of speech/language impairment which could benefit from the services of a speech/language therapist.

The geriatric home which was sampled appeared to have

a high proportion of speech impaired residents, however, there is no reason to suspect that the geriatric home was in any way different from twenty more similar residences in urban Christchurch. In October 1978, the total geriatric population (i.e. persons over the age of 65 years) was 30,135 and while the majority of them live at home and probably do not have any speech/language impairment, the geriatric population resident in the variety of Church homes (as in this study), private and public hospitals and nursing homes which provide care for approximately two and a half thousand old persons, could be considered 'at risk' with regard to speech impairment. If an estimate of incidence is made using Table 28, with regard to the 85+ group (note this is the lowest estimate i.e. 20%) in the American study, and since the population appears to be similar to the one screened in this study, there could be approximately 500 geriatric persons in 'need' of speech/language therapy in Christchurch. According to the Quirk Report (1972), one speech therapist per 60 speech impaired geriatrics would be a reasonable figure for staffing ratios, and allowing for a 6 month treatment period per person, 1 speech/language therapist per 120 geriatrics per annum seems reasonable. This would mean that a total of 4 speech/language therapists would be required in Christchurch to work fulltime with the geriatric population resident in homes and hospitals.

The prison sample is very interesting because it was drawn from a very wide geographical area (all of the South Island) and although the sample was comparatively small, there is no reason to suspect that October was in any way different from any other month. A frequency of 12 per cent

suggests that the speech/language abilities of this group of adults should be examined more carefully. There could well be sufficient speech impaired prisoners to warrant the employment of a speech/language therapist in the Justice Department.

In summary, the results of Study 3 suggest that of the adults in the community (or in community institutions) who have some kind of adjustment/social problem, a considerable number also have some degree of speech/language impairment and are in 'need' of a therapy service to cater for their problems.

CHAPTER 7

STUDY 4: INCIDENCE OF SPEECH/LANGUAGE DISORDERS AMONG ADULTS IN THE COMMUNITY

While Studies 1, 2 and 3 probed adult populations who could be regarded as 'at risk' with regard to acquiring or manifesting a definable speech/language disorder, either because of ill health or some kind of personal problem, Study 4 focussed upon three groups of adults in the general community in order to try to estimate the frequency of speech impairment among a cross-section of ordinary citizens. The three sub-populations screened were: (a) the participants in a suburban Community Centre; (b) the employees in a large clothing factory; and (c) the readers of an advertisement in the Christchurch daily newspapers (e.g. morning and evening).

POPULATION A: SUBURBAN COMMUNITY CENTRE

SUBJECTS

The subjects in this probe were the regular users of a large suburban Community Centre, located in the north-west area of metropolitan Christchurch. Information obtained from the Recreational Officer at the Community Centre indicated that most of the people who used the Centre lived within a five mile radius of the shopping centre where it is located, although a few persons travelled considerable distances to get there (between 10-15 miles). Regular

courses provided for approximately 1,000 adults over a seven day period. The administrators of the Centre estimated that the proportion of males to females was approximately one third males to two thirds females. The age range was wide (from 18-65+ years) and the Centre users came from a wide range of socio-economic levels (Levels 2-5 inclusive on the Elley/Irving 1976, 1977 Scales).

The present screening was undertaken on a total of 379 persons. All persons screened were over the age of eighteen and were attending one or more of 23 different classes held during a four day period in September 1977. The classes included such subjects as Art, Bowls, Bridge, Foreign Languages, Kilo Club, Ladies Keep Fit, Pottery, Table Tennis, Techorans, Yoga, Rotary, and Weight Watchers. Classes were held at different times of the day: 10 in the mornings (9.00 - 12.00), 10 in the evenings (7.00 - 10.00) and 3 in the afternoons (1.00 - 3.00). Table 33 shows the distribution of males and females in the 23 classes.

INSTRUMENTS AND PROCEDURE

A very brief questionnaire was developed to screen this population (Appendix D). There were three major parts to the questionnaire: (a) a brief explanation of the general purpose of the survey; (b) an itemization of general descriptive data which would enable subsequent contact to be made; and (c) a scale on which the participant could indicate the severity of any problems he/she might have or might have had with speech. The SLI was administered to every person who admitted that he/she had a speech problem.

Table 33

Total population of participants in 23 classes at a local suburban community centre during a four day period, Monday, 12 September - Thursday, 15 September 1977.

Class	Male participants	Female participants	Combined
1	-	12	12
2	2	26	28
3	26	-	26
4	-	15	15
5	-	18	18
6	10	10	20
7	-	7	7
8	4	16	20
9	-	42	42
10	-	8	8
11	5	5	10
12	-	20	20
13	-	22	22
14			
15	4	12	16
16	-	7	7
17	8	25	33
18	-	5	5
19	-	7	7
20	5	7	12
21	4	6	10
22	7	5	12
23	4	10	14
Totals	84 (22.2)*	295 (77.8)	379 (100)

* Entries in the main body of Table 33 are frequencies, while the entries in parentheses are percentages based on the total number of participants (N = 379).

(The SLI was described in Study 1.)

Initial contact was made with the Community Centre through a meeting with the Senior Recreational Officer (an introductory letter followed by a telephone call and personal meeting). Subsequently, the general aim of the survey was explained to all the staff, and their support and co-operation was sought and obtained. Each tutor was provided with specific instructions regarding the distribution, completion and collection of forms. During class, each tutor briefly explained the purpose of the survey and distributed the forms for completion. The completed forms were then placed in envelopes to ensure full confidentiality, and at the end of each class returned to the Community Centre Office. The forms were collected from the office by the investigator.

The survey was undertaken over a four day period (September 12-15). These four days were selected for the survey because the concentration of adult classes was greatest on those days. During the same period, a pile of speech/language self referral forms were placed in the Community Centre Library. Approximately four weeks later the investigator administered the SLI to every person that had indicated they still had, or used to have, a speech/ language disorder. These were administered at the Community Centre prior to the participant's class.

A number of men in the Bridge and Rotary Clubs refused to participate in the study on the grounds that it was an "infringement of their liberty".

POPULATION B: CLOTHING FACTORY SURVEY

SUBJECTS

The subjects in this section of the study were all adult persons (over eighteen) employed in a large clothing factory. The total number employed at the time of the study was 1213 (559 males and 654 females). The factory was situated in the industrial section of metropolitan Christchurch, about one mile south of the city centre. From information received from the Personnel Department of the factory, the age range of persons employed was 15-60 years (mean 37 years) and came from all SES levels in terms of the Elley/Irving (1976 and 1977) Scales.

INSTRUMENTS AND PROCEDURE

The same brief questionnaire with minor alterations in wording (e.g. Class was replaced by job) used with Population A was used (Appendix D). Initial contact was made with the Group Personnel Officer (an introductory letter, followed by a telephone call and personal interview). During the interview the investigator explained the purpose of the survey and requested permission to screen all employees over the age of eighteen years. However, this was not possible because of the size and geographical layout of the factory and the nature of the work. The factory management were not agreeable to an observer approaching employees while they were working at their machines because of safety factors and loss of productivity. Consequently, the lunch break was the only time that data could be collected. The data were gathered by the investigator with

the help of senior speech/language therapy students.

A brief introduction and simple explanation about the purpose of the survey were given to groups of three to four persons while they were eating their lunch. They were then presented with the short questionnaire (Appendix D) and a pencil, and following completion of the questionnaire they were instructed to fold it so no-one could see their responses and to place it in a box carried by the observer for that purpose. The sample was taken during the lunch break (12.00 - 12.45 p.m.) from persons using the five cafeterias/lunch rooms in the factory during the week October 10-14 inclusive. A different cafeteria was screened each day (e.g. Monday - Hosiery canteen, Tuesday - Cutters, Wednesday - Administration, etc.). A determined effort was made to screen every person in that particular canteen on that particular day, and while it is possible that one or two persons may have been missed, it is very unlikely. Only eight persons declined to participate in the study and as the investigator had personal contact with them, it was possible to ascertain whether they had an obvious speech problem. Two women who refused to participate had a profound hearing loss (they communicated by means of sign language) and one man who refused to participate was an emotionally disturbed patient on work leave from a psychiatric hospital. The remaining five persons had no obvious speech/language disorder.

POPULATION C: NEWSPAPER ADVERTISEMENT RESPONDENTS

The third probe in this study was directed at all the readers of two daily newspapers published in Christchurch. A short advertisement (copy in Appendix D) was placed in the Personal Column on Wednesday, November 23 and Saturday, November 26, 1977.

RESULTS AND DISCUSSION

Population A: Community Centre Survey

In September 1977, 379 adults were screened for speech impairment, at the Community Centre - 84 (22.1%) men and 295 (77.8%) women. These proportions are somewhat different from the sex ratio in the total adult Community Centre population (one third male and two thirds female). The differences were probably due largely to the number of males from two clubs who were unwilling to participate.

Distribution of adults who perceived that they used to have a speech problem: Details of the ratio of males and females who used to have a speech problem are presented in Table 34. A total of 12 (3.1%) of the total adult population screened had experienced a minor articulation problem which had been treated in childhood. There were 2 (2.3%) males and 10 (3.3%) females. The predominance of women in this category does not agree with previous research and may have been affected by the underrepresentation of men in the sample. The ratio that has been reported is from 2:1 to 4:1 (Milisen, 1971; Perkins, 1978) in favour of males. However, the percentage was lower than expected for both

Table 34

Distribution of male and female participants of a community centre who perceived that they 'used to have a speech/language problem'.

Sex	Used to have a minor speech/language problem	Used to have a major speech/language problem
Male	2 (2.3)*	-
Female	10 (3.3)	-
Totals	12 (3.1)	-

* The percentages are based on the total male population (N = 84); the total female population (N = 295) and the total population (N = 379), so that the percentage of male/female and overall rate of speech impairment is clear.

sexes. Perkins (1978) has estimated that approximately one fifth of all children have some problems with speech/ language. The older the children the less frequent the speech impairment (e.g. 20 per cent with pre school children, which reduces to approximately 2 per cent in the upper grades).

Distribution of adults who perceived that they had a speech problem: Table 35 reports the distribution of both major and minor problems for both males and females. It can be seen that there were proportionately more males (2.38%) who reported having minor problems than females (0.67%). All of these proved to have a stuttering problem. The two persons who reported that they had major disorders said they were caused by cerebral vascular accidents. One had Dysarthria (slurred speech) and the other Aphais (mild word finding difficulty). All six speech impaired adults identified in the Community Centre population were between the ages of 35-45 years. Due to the mildness of their impairment and their relatively young age, all these persons would probably benefit from a speech/language therapy programme.

In summary, in a total adult population of 379 adults, 6 (1.6%) persons had definable speech/language disorders at the time of the survey. There were 3 males who represented 3.5 per cent of the male adults screened, and 3 females who represented 1 per cent of the female population screened. All apparently could have benefited from treatment.

Table 35

Distribution of male and female participants of a community centre who perceived that they 'still had a speech/language problem' in September 1977.

Sex	Minor problem	Major problem	Combined
Male	2 (2.38)	1 (1.19)	3 (3.5)
Female	2 (0.67)	1 (0.38)	3 (1.0)
Totals	4 (1.49)*	2 (0.74)	6 (1.6)

* The percentages are based on the total male population (N = 84), the total female population (N = 295) and the total participants both male and female (N = 379) to provide separate rates of speech impairment for males/females and the total population.

Population B: Clothing Factory Survey

A total of 391 of the factory staff were screened for speech/language disorders in October 1977. There were 166 (42.5%) males and 225 (57.5%) females in the sample which closely reflected the sex distribution of the total factory population (559, 46% males and 654, 53.9% females). The distribution of the factory sample by sex and socio-economic level (Elley/Irving, 1976 and 1977 Scales) is presented in Table 36. The distribution was determined by the employment structure of the factory (e.g. no females in management positions).

Distribution of adults who perceived that they used to have a speech problem: Table 37 indicates the number of males and females by SES levels who reported that they used to have a minor speech/language problem. The total (39, or 9.97% of all those screened) is made up of 24 males (14.4% of all males) and 15 females (6.6% of all females). These results are similar to those reported by Milisen (1971).

Distribution of adults who reported that they had a speech problem: At the time of the study 20 (5.2%) of the employees in the clothing factory perceived that they still had either a minor or major speech/language problem. The distribution by sex and SES level is presented in Tables 38 and 39. Most of the males and females with disorders, both minor and major, came from the Lower SES level, and there were slightly more males than females. However, perhaps the most interesting finding was the fact that the majority of the speech impaired persons had stutters. The incidence rate for this disorder was

Table 36

Distribution of factory sample screened by Sex and Socio-economic Status (SES)[a] in September 1977.

Socio-economic status	Number of male employees	Number of female employees	Combined
Upper (1/2)	20 (12.0)	-	20 (5.1)
Middle (3/4)	32 (19.2)	44 (19.5)	76 (19.4)
Lower (5/6)	114 (68.6)	181 (80.4)	295 (75.4)
Totals	166 (42.5)	225 (57.5)	391 (100)

[a] Elley/Irving (1976 and 1977) Scales.

* Entries in the main body of Table 36 are frequencies, while the entries in parentheses are based on the number of subjects in each column.

Table 37

Distribution of factory employees by Sex and Socio-economic Status (SES)[a] who perceived that they 'Used to have a speech/language problem (minor)' in September 1977.

Socio-economic status	Number of male employees	Number of female employees	Combined
Upper (1/2) N = 20	3 (15.0)*	-	-
Middle (3/4) N = 32	3 (9.4)	-	3
Lower (5/6) N = 18	18 (15.8)	15 (8.2)	33
Totals	24 (14.4)	15 (6.6)	39 (9.8)

[a] Elley/Irving (1976 and 1977) Scales.

* Entries in parentheses are percentages based on the number of male/female subjects in each SES level, while the totals are based on the total male/female population screened.

Table 38

Distribution of factory employees by Sex and Socio-economic Status (SES)[a] who perceived that they 'had a minor speech/language problem'[b] in September 1977.

Socio-economic status	Number of male employees	Number of female employees	Combined
Upper (1/2)	-	-	-
Middle (3/4)	-	-	-
Lower (5/6)	5	6	11
Totals	5 (3.0)*	6 (2.6)	11 (2.8)

[a] Elley/Irving (1976 and 1977) Scales.

[b] Eight of these persons had stutters; three minor articulation problems.

* Entries in parentheses are proportions based on the total number of male/female employees and the total number screened.

Table 39

Distribution of factory employees by Sex and Socio-economic Status (SES)[a] who perceived that they 'had a major speech/language problem'[b] in September 1977.

Socio-economic status	Number of male employees	Number of female employees	Combined
Upper (1/2)	-	-	-
Middle (3/4) N = 32	3 (9.3)	-	3
Lower (5/6) N = 18	2 (1.7)	4 (3.8)	6
Totals	5 (3.0)	4 (1.7)	9 (2.3)

[a] Elley/Irving (1976 and 1977) Scales.

* Entries in parentheses are proportions based on the number of males or females in each SES category.

[b] All these persons had stutters.

Table 40

Distribution of Respondents to a newspaper advertisement by Sex, Age, Socio-economic Status (SES)[a], and Type of Disorder, in November 1977.

Socio-economic status	Age	Sex	Type of Disorder
Upper (2)	8 years	male	Rhythm
Lower (5)	26 years	female	Cleft palate
Middle (3)	32 years	male	Rhythm
Middle (4)	35 years	male	Rhythm
Lower (6)	56 years	female	Rhythm
Middle (3)	32 years	female	Cleft palate

[a] Elley/Irving (1976 and 1977) Scales.

4.3 per cent.

The results from the factory sample approximate Milisen's estimate that between 4-5 per cent of the general population have some type of speech/language impairment.

Population C: Results from the Newspaper Advertisement: A total of six adults replied to the two newspaper advertisements. Table 40 provides details of age, sex, SES level and type of disorder. Half of the sample was male with an age range from 18-35 years, while the females were aged from 26-56 years. The most common type of disorder was a stutter, while the other two persons had cleft palates.

The results of these advertisements added little to the results of the rest of the project, except to indicate that there are relatively few people in need of therapy who read and would respond to a newspaper advertisement.

CONCLUSION

It is noticeable that in each population screened in Study 4, stuttering was by far the most common type of disorder. At the time of the study there was one part-time clinic for stutterers in operation at Christchurch Teachers' College. Data obtained in Study 5 suggests that this clinic tends to treat middle upper SES levels, perhaps because of its location. The number of clients treated in this clinic was limited by the constraints of time and personnel (e.g. the clinic operated for only 30 weeks annually and was staffed by only two trained staff and a number of students). The limitations of the service (e.g. only weekly sessions

and lack of follow up) severely curtails the effectiveness of therapy. It has been suggested (Ingham and Andrews, 1973) that stuttering is most effectively controlled by intensive therapy, together with regular follow-up treatment. Consequently, it is most unlikely that the Teachers' College Clinic is coping adequately with even a small proportion of the stutterers who are present in the community. In light of the evidence found in this series of studies, it seems both necessary and appropriate that a satisfactory service is provided for adult stutterers, within the metropolitan area of Christchurch.

CHAPTER 8

STUDY 5: PAST AND PRESENT CLIENTS OF THE STUTTERERS' CLINIC - PERCEPTION OF NEEDS

Studies 1-4 endeavoured to locate adults with definable speech/language disorders in a variety of sub-populations within the Christchurch metropolitan area. These studies surveyed residents in three public hospitals during June 1977 (Study 1), the patients of 31 doctors who visited the doctors' surgeries during June 1977 (Study 2), clients who sought assistance from a variety of social agencies during August 1977, and men admitted to prison during October 1977 (Study 3); regular users of a large suburban community centre, the staff of a clothing factory, and the respondents to a newspaper advertisement (Study 4). The primary objective in these four studies was to collect data on the incidence of the four main types of speech/language disorders, so that a reasonable estimate of 'real need' for therapy services with Christchurch speech impaired adults could be made.

Stuttering was found to be prevalent among the majority of the sub-populations screened. The incidence of stuttering in the general community appears to be between 0.5 to 1 per cent, which is similar to the incidence reported in overseas studies (Milisen, 1971; Perkins, 1978). Study 5 examined the only available service (apart from the hospital clinics) for Christchurch adults who stutter, to

obtain information about the characteristics of a sample of adult stutterers and their 'perceived needs' with regard to the type of service required.

SUBJECTS

The Stutterers' Clinic was organized by the speech/language lecturers employed at the Christchurch Teachers College in order to provide a teaching and learning experience for student speech/language therapy students, and a free treatment service for adults with stutters. Each year about March the Stutterers' Clinic advertises for new clients in the daily newspaper. At the time of this study the clinic had been operating for two and a half years, and 49 persons were on the clinic register. Due to the length of time since discharge, it was not possible to locate six past clients, either because they had died (N = 2) or moved residence (N = 4). The sample consisted of 25 past clients and 18 present clients of the Stutterers' Clinic (N = 43).

INSTRUMENT

A questionnaire was devised by the investigator to obtain four kinds of information:

(1) The type of people who attend the Stutterers' Clinic. Information was requested on personal characteristics (e.g. age, sex and occupation);

(2) Theeeffects a stutter has on a person. Subjects were required to survey the history of their speech problem (e.g. length of time since onset of problem,

specialists consulted, effects if any on career choice, etc.);

(3) The stutterer's perception of the effectiveness of treatments past and present;

(4) The kind of therapy services they would like developed for persons with stutters.

A copy of the questionnaire is listed in Appendix E.

PROCEDURE

Initial contact with the Stutterers' Clinic was made through the Senior Lecturer in speech/language therapy at the Christchurch Teachers' College. The investigator was invited to spend an evening at the clinic to observe and interact with the therapists and clients before devloping the questionnaire. A copy of this questionnaire was given to every client who attended the clinic on Thursday, 18 August 1977, prior to the usual therapy programme. Clients were assured of the confidentiality of their responses and were provided with an envelope for the completed questionnaire. All the completed questionnaires were subsequently collected from the clinic by the investigator. A copy of the questionnaire, plus a covering letter (Appendix E) and a stamped and addressed envelope was posted to all discharged clients.

RESULTS AND DISCUSSION

The overall response rate was 38 (90.4%) of which 22 (88%) came from past clients and 16 (88.8%) from attending clients. All the present clients readily agreed to

participate in the study, but two persons were absent on the night the questionnaire was presented, because of illness, and were subsequently excluded from the study.

Personal Data

The distribution of past and present clients who completed the questionnaire (age and sex) is presented in Table 41. It is apparent that the clients who attended the Stutterers' Clinic were predominantly male - 32 (84.2%) to 6 (15.7%) females. This finding corresponds to overseas studies where the ratio of males to females with stutters is reported to be 5:1 - 8:1 (Milisen, 1971; Perkins, 1978). The second fact was that more than half of the clients were under twenty-seven years.

The clients who participated in the study were classified by socio-economic status (Elley and Irving's 1976, 1977 Scales). The results are presented in Table 42. It would appear that more males who seek help with stutters come from the Upper or Middle SES level. This could be due to a variety of factors, but two seem particularly likely. First, a speech problem may interfere with the life style of persons in the higher SES levels than the Lower SES. Secondly, persons with higher levels of education and income would probably be more likely to know how to make use of the system (i.e. find out what facilities are available and use them).

In summary, the personal data indicates that the sex ratio of clients attending the clinic is similar to that found overseas. In general the frequency of stutterers decreases as a function of age, and proportionately more

Table 41

Distribution of Age by Sex for Past and Present Clients of the Stutterers' Clinic

Age	Male Clients	Female Clients	Combined
18-22	8	2	10 (26.3)*
23-27	8	2	10 (26.3)
28-32	3	-	23 (7.8)
33-37	1	-	1 (2.6)
38-42	5	-	5 (13.1)
43-47	2	1	3 (7.8)
48-52	3	-	3 (7.8)
53-57	-	1	1 (2.6)
58-62	2	-	2 (5.2)
Total	32 (84.2)	6 (15.7)	N = 38

* Entries in the main body of the table are frequencies, while entries in parentheses are percentages based on the total number of clients.

Table 42

Distribution by Socio-economic Status (SES) in terms of Upper (1/2), Middle (3/4) and Lower (5/6) cagegories[a] of Past and Present Clients at the Stutterers' Clinic, located at Christchurch Teachers' College.

Socio-economic status	Male clients	Female clients	Combined
Upper (1/2)	10 (31.2)*	1 (16.6)	11 (28.9)
Middle (3/4)	17 (53.1)	1 (16.6)	18 (47.3)
Lower (5/6)	5 (15.6)	1 (16.6)	6 (15.7)
Unknown[b]	-	3 (50.0)	3 (7.8)
Totals	32	6	N = 38

[a] Elley/Irving (1976 and 1977) Scales

[b] No information available.

* Entries in the main body of the table are frequencies, while entries in parentheses are percentages based upon the number of objects in each column.

Table 43

Distribution of Past and Present Clients' "Perception of their Speech Problem" by Socio-economic Status.[a]

Socio-economic Status	No description relevant	Repeats initial consonants	Hesitates before speaking	Blocks	Nervous reaction
Upper (1/2)	2	3	1	5	-
Middle (3/4)	5	3	3	7	-
Lower (5/6)	3	1	1	-	1
Unknown	2	-	-	-	1
Totals	12 (31.5)*	7 (18.4)	5 (13.1)	12 (31.5)	2 (5.2)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of the table are frequencies, while entries in parentheses are percentages based on the total number of sobjects.

stutterers from the middle and upper SES levels have sought help at the Teachers' College Clinic than lower SES persons.

Data relating to the History of the Client's Stutter

While all the respondents (N = 38) claimed to have had a stutter for as long as they could remember (i.e. early childhood), the reported age of onset ranged from 3-7 years. The distribution of responses to the client's perception of the problem by SES level is presented in Table 43. Twelve (31.5%) of the clients were unable to describe adequately what their problem was or had been. An equal number stated that their problem was 'Blocking' which is a technical term probably learnt during the course of therapy.

Details on the effect of a stutter on the client's social life by SES are presented in Table 44. While 20 (52.6%) of the total sample believed that their stutter had a detrimental effect on their social lives, this finding was not consistent across SES levels. It would appear that a slightly higher proportion of the lower and middle SES level clients believed that their stutter adversely affected their social interactions than the upper SES group. This seems to suggest that it may not be the stutter per se which interferes with satisfying social relations, but other factors (e.g. self image and confidence). Table 45 shows that while 12 (31.5%) of the clients believed that his/her stutter had restricted the choice of career, slightly more 14 (36.8%) believed that stuttering was of no consequence in this area.

The distribution of Stutterers who had consulted a specialist about his/her stutter, and the type of specialist

Table 44

Distribution of Stutterers' Perception of the Effects of the stutter upon their social life by Socio-economic status[a].

Socio-economic status	Does not affect	Slightly affects	Restricts choice	Inadequate conversations
Upper (1/2)	5	3	-	3
Middle (3/4)	2	-	4	12
Lower (5/6)	-	1	-	5
Unknown	2	1	-	-
Totals	9 (23.6)*	5 (13.1)	4 (10.5)	20 (52.6)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of the table are frequencies, while entries in parentheses are percentages based on the total number of subjects.

Table 45

Distribution of Stutterers' Perception of the 'Effects of the Stutter upon career' by Socio-economic Status.[a]

Socio-economic status	Does not effect	Slightly effects	Restricts choice	Effects promotion
Upper (1/2)	5	4	2	-
Middle (3/4)	3	4	7	3
Lower (5/6)	3	-	3	1
Unknown	3	-	-	-
Totals	14 (36.8)*	8 (21)	12 (31.5)	4 (10.5)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 45 are frequencies, while the entries in parentheses are percentages based on the total number of subjects.

Table 46

Distribution of Stutterers who consulted some specialist about their Stutter, by Socio-economic Status.[a]

Socio-economic status	Yes, have consulted specialist(s)	No, have not consulted specialist(s)
Upper (1/2)	5	6
Middle (3/4)	9	9
Lower (5/6)	3	3
Unknown	2	1
Totals	19 (50.0)*	19 (50.0)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 46 are frequencies, while the entries in parentheses are percentages based on the number of subjects in each column.

Table 47

Distribution of the Type of Specialist consulted by 19 Stutters by Socio-economic Status.[a]

Socio-economic Status	Doctor	Psychol-ogist	Hypnot-ist	Psychi-atrist	Colour Therapist	Chiro-practor
Upper (1/2)	4	1	-	-	-	-
Middle (3/4)	3	2	7	1	-	-
Lower (5/6)	2	1	2	1	1	-
Unknown	1	1	2	-	1	1
Totals	10(52.6)*	5(26.3)	11(57.8)	2(10.5)	2(10.5)	1(5.2)

It should be noted that 7 of the sample consulted more than one specialist.

Table 48

Distribution of the Number of Specialists consulted by 19 Stutterers by Socio-Economic Status.[a]

Socio-economic Status	Number of Specialists Consulted 1	2	3 or more
Upper (1/2)	5	-	-
Middle (3/4)	6	1	1
Lower (5/6)	1	1	2
Unknown	-	1	1
Totals	12 (63.1)	3 (15.7)	4 (21.0)

[a] Elley/Irving's (1976 and 1977) Scales.

Table 49

Distribution of Number of Consultations by Stutters (N = 19) with other Specialists by Socio-economic Status.[a]

Socio-economic Status	Number of Consultations			
	Only 1	2-10	11-20	21+
Upper (1/2) (N = 5)	4	1	-	-
Middle (3/4) (N = 9)	1	4	4	-
Lower (5/6) (N = 3)	-	1	-	2
Unknown (N = 2)	-	1	-	1
Totals	5 (26.3)*	7 (36.8)	4 (21.0)	3 (15.7)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 49 are frequencies, while the entries in parentheses are percentages based on the number of subjects who consulted one or more specialists (N = 19).

Table 50

Distribution of Period of Time Stutters (N = 19) consulted Specialists by Socio-economic Status.[a]

Socio-economic Status	Length of Time Specialists Consulted	
	Less than 3 months	3 months or more
Upper (1/2)	1	-
Middle (3/4)	1	7
Lower (5/6)	1	2
Unknown	-	2
Totals	3 (21.4)*	11 (78.5)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 50 are frequencies, while the entries in parentheses are percentages based on the number of subjects who consulted one or more specialists (N = 14).

Table 51

Distribution of Stutterers' description/evaluation of Consultations with various Specialists by Socio-economic Status.[a]

Socio-economic Status	No use	Analyse Cause	Helpful	Relax
Upper (1/2)	4	-	1	-
Middle (3/4)	2	2	2	2
Lower (5/6)	4	-	-	-
Unknown	1	-	-	1
Totals	11 (57.8)	2 (10.5)	3 (15.7)	3 (21.0)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 51 are frequencies, while entries in parentheses are percentages based on the number of subjects who consulted specialists (N = 19).

consulted by SES are presented in Tables 46 and 47, and Table 48 indicates the number of specialists consulted. Half of the sample consulted a specialist (either a doctor, psychologist, hypnotist, psychiatrist, colour therapist or chiropractor) about their stutter prior to attending the Stutterers' Clinic. There was no difference in SES level between those that did and those that did not. Over half of the persons who sought help from a source other than a speech therapist, consulted only one other specialist. Seven (36.74%) consulted two or more specialists. It is interesting to note that the family doctor was asked for advice from 10 (52.6%) of the 19 stutterers who consulted specialists, while 11 (57.8%) consulted a hypnotist.

While 12 (63.1%) of the stutterers who sought help from specialists, only consulted one specialist (e.g. the family doctor), 7 (37.8%) consulted two or more (Table 48). The distributions of the number of consultations and the period of time that these stutterers consulted specialists by SES level are presented in Tables 49 and 50. Some stutterers consulted the family doctor once a month for three consecutive months about their speech problem. Moreoever, over half of them found these consultations useless (Table 51). Unfortunately, proportionately more of the lower SES group sought help from specialists and found it unhelpful than either the middle or upper SES levels. In summary, it appears that stutterers in the lower income group spent money seeking help with their stutters to no avail.

Speech/Language Therapy (Past and Present)

During their Primary School days 28 (73.6%) of the sample had been referred to a speech/language therapist for assessment and 26 (68.4%) had received some treatment. The distributions of the stutterers who were referred to a speech/language therapist during their school life, and the frequency of the treatment provided, are presented in Tables 52 and 53. Clearly, the majority 22 (84.6%) had received therapy once a week only, while three (1.5%) had received fortnightly sessions and only one person had made several visits to the speech clinic per week. In addition, as Table 54 indicates, 11 (42.3%) received therapy for less than one school term (i.e. 3 months), while 10 (38.4%) attended the clinic between one and three terms and the same same number received therapy for several years. As previously stated, therapy was usually only obtainable once per week and it is thus understandable that the treatment was not notably effective. Recent research (Ingham and Andrews, 1976) has indicated that effective therapy for stutterers needs to be intensive and frequent (i.e. at least daily) and that there should be some kind of follow-up programme. None of the stutters in this study had experienced this type of therapy programme.

In evaluating the effectiveness of the treatment received from the Stutterers' Clinic located at the Teachers' College, an attempt was made to measure improvement in communication in terms of both the speaker (stutterer) and the listener (family, friends etc.). The results of such an attempt are presented in Tables 55 and 56. There are obvious differences between the two types of evaluation.

Table 52

Distribution of Stutterers (N = 38) who were referred to a speech/language therapist during their Primary School days by Socio-economic Status.[a]

Socio-economic Status	Referred for Speech Therapy Yes	No
Upper (1/2)	7[b]	4
Middle (3/4)	15[b]	3
Lower (5/6)	4	2
Unknown	2	1
Totals	28 (73.6)	10 (26.3)

[a] Elley/Irving's (1976 and 1977) Scales.

[b] 1 person did not receive any therapy.

* Entries in the main body of Table 52 are frequencies, while entries in parentheses are percentages based on the number of subject in the study.

Table 53

Distribution of the Frequency of Treatment for Stutterers (N = 26) during their childhood, by Socio-economic Status.[a]

Socio-economic Status	How Often Weekly	Fortnightly	Other
Upper (1/2)	5	1	-
Middle (3/4)	12	1	1[b]
Lower (5/6)	3	1	-
Unknown	2	-	-
Totals	22 (84.6)	3 (11.5)	1 (3.8)

[a] Elley/Irving's (1976 and 1977) Scales.

[b] Twice a week.

* Entries in the main body of Table 53 are frequencies, while the entries in parentheses are percentages based on the number of subjects who received therapy in childhood (N = 26).

Table 54

Distribution of the Period of Time that Therapy was received by Stutters (N = 26) during their childhood, by Socio-economic Status.[a]

Socio-economic Status	Period of Time 1-12 Weeks	3-12 months	12-24 months	2 years+
Upper (1/2)	2	1	3	-
Middle (3/4)	3	3	2	6
Lower (5/6)	1	1	-	2
Unknown	-	-	-	2[b]
Totals	6 (23.0)*	5 (19.2)	5 (19.2)	10 (38.4)

[a] Elley/Irving's (1976 and 1977) Scales.

[b] Both females

* Entries in the main body of Table 54 are frequencies, while entries in parentheses are percentages based on the number of subjects who received therapy (N = 26).

Table 55

Past and Present Clients' (of Stutterers Clinic) perception of speech improvement by Socio-economic Status.[a]

Socio-economic Status	Number of Persons with shome speech has improved 0	1/2 persons	3/4 persons	5/6 persons
Upper (1/2)	1	2	1	7
Middle (3/4)	1	2	8	7
Lower (5/6)	1	1	2	2
Unknown	2	-	1	-
Totals	5 (15.1)*	5 (13.1)	12 (31.5)	16 (42.1)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 55 are frequencies, while entries in parentheses are percentages based on the total number of subjects (N = 38).

Table 56

Other Peoples' Evaluation of Improvement in Speech.[a]

Socio-economic Status	Number of Persons who had commented on Improvement 0	1-2 persons	3-4 persons	5-6 persons
Upper (1/2)	2	6	3	-
Middle (3/4)	3	7	8	-
Lower (5/6)	2	2	1	1
Unknown	2	1	-	-
Totals	9 (23.6)*	16 (42.1)	12 (31.5)	1 (2.6)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries made in the main body of Table 56 are frequencies, while entries in parentheses are percentages based on the total number of subjects (N = 38).

While 16 (42.1%) of the stutterers perceived that their speech had improved with 5-6 people in their social environments, only one (2.6%) person had received this evaluation from other people. However, many adults probably do not like to make any comment about a stutterer's speech, even if they do notice an improvement because they feel it would be insensitive. Hence it is possible that only persons who have a very close relationship with a stutterer would make any comment. This could account for the 16 (42.1%) stutterers who received positive feedback from one of two persons (Table 56). Moreover, as self perception of improvement is of primary importance and as 28 (73.6%) of the stutterers claimed that they felt that their speech had improved with more than three persons, it would appear that the Stutterers' Clinic (in spite of its limitations) had a positive effect upon the stutterers who attended.

Future Services

A summary of the suggested types of future services by the present/past clients of the Stutterers' Clinic is presented in Table 57. In general it appeared that the past/present clients approved of the present facility, but would like services extended to include more intensive and frequent sessions as well as a follow-up programme. It was suggested that in order to provide staff for such an extended service, interested speech/language therapists from the Education Service be encouraged to become involved in the present clinic on a part-time basis.

At present the services for the Stutterers' Clinic are provided free of charge to the consumer, because it is

Table 57

Socio-economic Status	Similar to present clinic	Expanded Service (more publicity)	Self Help Group	Preventive in childhood	More intensive Programme	Nothing relevant suggested
Upper (1/2)	1	4	2	2	1	1
Middle (3/4)	4	6	4	-	2	2
Lower (5/6)	3	3	-	-	-	-
Unknown	1	1	-	-	-	1
Totals	9 (23.6)*	14 (36.8)	6 (15.7)	2 (5.2)	3 (7.8)	4 (10.5)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 57 are frequencies, while the entries in parentheses are percentages based on the total number of subjects (N = 38).

Table 58

Stutterers' responses to Cost of Future Services being met by the State or the Consumer, by Socio-economic Status.[a]

Socio-economic Status	Consumer to Pay		
	Yes	No	Uncertain
Upper (1/2)	4	5	2
Middle (3/4)	6	10	2
Lower (5/6)	-	2	6
Unknown	1	-	2
Totals	11 (28.9)*	17 (44.7)	10 (26.3)

[a] Elley/Irving's (1976 and 1977) Scales.

* Entries in the main body of Table 58 are frequencies, while the entries in parentheses are percentages based on the total number of subjects in the study (N = 38).

part of a teaching-learning situation in the Speech/Language Therapy Training Course. However, if services to adult stutterers are to be extended, the extra staff will expect to be paid for their services. The distribution of the clients' respones to the cost of services provided being met by the state or the consumer is presented in Table 58. According to 17 (44.7%) the cost of speech/language services for adults should be met by the state, because New Zealander are heavily taxed ostensibly to provide for social services. Consequently the clients felt that speech/language therapy services should be subsidized, if the client was referred by a general practitioner. While 11 (28.9%) of the clients claimed that they would be willing to pay for services, 10(90.9) of them qualified their agreement to pay in some way (e.g. no one should be excluded from therapy because of inability to pay). Ten of the clients were uncertain about payment although they indicated that they felt that the speech/language therapists should be paid by some one.

Table 59 indicates that 21 (55.2%) of the clients first gained information about the Stutterers' Clinic in the newspaper, either by means of a short news item describing the Clinic or from an advertisement placed especially to obtain clients for the Clinic.

SUMMARY OF MAIN FINDINGS

(1) Type of People who attended the Stutterers' Clinic

Clients were predominantly male from middle to upper SES levels. The ratio of 5:1 in favour of males and the

Table 59

Source of Information about the Stutterers' Clinic for past and present clients.

Socio-economic Status	Information Source: Advertisement/article in newspaper	Friend	General Practitioner	Other e.g. A speech therapist
Upper (1/2)	5	3	1	2
Middle (3/4)	10	2	1	5
Lower (5/6)	3	-	-	-
Unknown	3	-	-	-
Totals	21 (55.2)*	5 (13.1)	2 (5.2)	7 (26.3)

* Entries in the main body of Table 59 are frequencies, while the entries in parentheses are percentages based on the total number of subjects in the study (N = 38).

high frequency under 27 years are similar to overseas findings about incidence and age.

(2) Effects of Stutter on the Individual

A slightly higher proportion of lower to middle SES level stutterers believed that their stutter negatively affected both their job opportunities and social interactions. It is possible that the stutterer's response to the stutter may be more handicapping than the stutter per se.

(3) Perception of the Effectiveness of Treatments

While 68.4 per cent had received some limited therapy in childhood, it was not notably successful. Consultations with other specialists had generally been a waste of time. However, 73.6 per cent of the stutterers believed that the Stutterers' Clinic had been beneficial.

(4) Future Services

In general, an expanded service on similar lines to the present facility was desired by the clients. They felt that Speech therapy should promote better public relations e.g. provide more information to the general public about speech impairment. The question of payment for future services seems to suggest that no one should be denied treatment simply because of an inability to pay.

CONCLUSION

Several important points emerged from Study 5. First, that in spite of the considerable limitations of the Teachers' College Clinic service, the clients perceived the treatment positively, albeit with several qualifications.

A number of the past clients regretted the lack of follow-up service and there was some criticism of the lack of information about stutters and treatments for the general public. It would thus seem essential that any future service incorporate the provision of increased publicity regarding the nature of stuttering, since accurate knowledge about this (or indeed about any type of disability on the part of the non-handicapped) should facilitate the integration and acceptance of persons who suffer from stuttering.

CHAPTER 9

SUMMARY AND CONCLUSIONS

SUMMARY

The primary objective in the present investigation was to examine the 'need' for speech/language services for adults in Christchurch on the basis of the number of adults within specific sub-populations, who appeared to have a discernible degree of speech impairment. The screening was undertaken by a variety of professional persons using specified criteria (viz., if communication of content was interfered with by the process of speech/language). A summary of the sub-populations screened in Studies 1-4 inclusive is presented in Table 60. A total of 8,371 adults were screened during June-November 1977, and of this group 217 (2.6%) presented with definable speech/language disorders. The screening process was undertaken initially (Study 1) with the sub-population which was expected to yield the highest prevalence of speech impairment and consequently the greatest 'need' for services (i.e. hospital patients). The sub-populations in Studies 2-4 were expected to yield lower prevalences of speech disorders than Study 1. The lowest prevalence was expected in Study 4 (i.e., young to middle aged adults in the community).

The results of Study 1 indicated that approximately 10 per cent of the total adult patient population (N = 1028) in H1, H2 and H3 had definable speech/language disorders at

Table 60

Summary of the sub-populations screened in Studies 1-4 inclusive and the frequency of speech/language disorders within each sub-population during the Survey conducted in 1977.

Study	Sub-population Source	Number of adults screened	Number of disorders and percentage of population screened
1	Adult patients in 3 public hospitals. N = 1028.		
	Subtotal:	700	109 (10.6%)
2(a)	Adult patients who consulted the 11 general practitioners who 'actively participated' in the study	6 080	27 (0.44%)
2(b)	Adult patients who consulted an ENT specialist	304	20 (6.6%)
	Subtotal:	6 384	47 (0.73%)
3(a)	Clients from 4 social agencies	446	11 (2.5%)
3(b)	Residents in a geriatric home	46	17 (36.9%)
3(c)	Male prisoners	25	7 (28%)
	Subtotal:	517	35 (6.8%)
4(a)	Adult participants of a suburban community centre	379	6 (1.6%)
4(b)	Employees in a clothing factory	391	20 (5.1%)
4(c)	Respondents to a newspaper advertisement	Unknown	6*
	Subtotal:	770	26 (3.4%)
Totals:	9 Sub-populations	8 371 adults screened	217 (2.6%) speech impaired

* These 6 speech impaired adults were omitted from the total of speech impaired because there is no figure available for the number of persons who read the advertisement.

the time of the survey. This result is consistent with that obtained with the only other published study in New Zealand (Welch, 1977). While there were more male than female patients in the three hospitals during the survey, the proportion of patients with speech impairment was approximately the same for both sexes and the highest frequencies occurred between the ages of 50-79 years. As would be expected in public hospitals, there were slightly more Lower SES level patients with disorders than Upper SES patients. SES level was, however, apparently not an important differential with regard to etiology, type of disorder or degree of severity. Cerebral vascular accident was the most common cause of speech impairment, followed by degenerative disease of the CNS for females, and those with 'no apparent medical basis' for males. The latter were all classified as stutterers (1.2 per cent of the total number of patients screened presented with stutters). The majority of the speech impaired patients were judged to have either moderate or severe disorders. An examination was also made of the records kept by the speech/language therapists at H1, H2 and H3 for the twelve month period prior to the survey. The average rate of patient referral was ten speech impaired adults per calendar month. Even allowing for the inflationary effect of long-term patients in the June data, it would appear that there are considerable differences in the frequency of patients with speech disorders and the number of speech impaired adults who were referred to the hospital speech/language therapists. While the referral rate per month could have been affected by a number of variables (e.g. time of the year, availability of service),

it seems unlikely that the difference between 109 speech disordered adults identified during the survey and the 10 who were referred per month could be accounted for. Consequently, it would appear that in H1, H2 and H3 only one per cent of the hospital patient population were referred to the speech/language therapist, and this figure is well below that reported both in New Zealand and overseas studies (Milisen, 1971; NINDS, 1970; Quirk, 1972; Welch, 1977). In other words, an incidence rate of 10 per cent for speech impairment among adult hospital patients seems to be a reasonable estimate.

In order to translate this information into the number of speech/language therapists needed to cater for this speech impaired population, it is necessary to project the number of hospital based speech disordered persons for a year. If the average length of stay in hospital is 6 weeks, over the course of one year nine different persons will occupy each bed. Therefore, as 109 speech impaired persons were identified in the survey, the annual projection of speech impaired adults would be 981. During 1976-77, approximately 120 speech impaired adults were treated by 2-2½ therapists, which translates into an annual case load of approximately 50 per therapist. At the current case load, an extra 19-20 speech/language therapists would be required to treat the increased numbers revealed in the survey. However, not all the identified cases would want or perhaps benefit from treatment. Secondly, once therapy was intensified, the actual numbers of speech impaired persons would reduce. Finally, given the economic and political realities of New Zealand's current situation,

a total of 10 speech/language therapists for the public hospital population would seem reasonable. However, this increase in numbers would be introduced gradually until a ceiling of 10 therapists was reached. It would be necessary, however, to monitor the effect of such an improved service on the speech impaired population and make the necessary staffing adjustments according to the current need.

In Study 2, 30 general practitioners and an ENT specialists screened a total of 17,555 adult patients who consulted them in June 1977 for speech/language disorders, and reported that 47 (0.26%) had a discernible degree of speech impairment. However, if the incidence is calculated using only those 11 general practitioners who participated actively, the total number of patients screened was 6,080 of whom 27 (0.44%) were found to have speech/language disorders. These same doctors estimated that the monthly incidence of speech impairment was approximately 0.7 per cent (Table 16). On this basis, a reasonable estimate of the frequency of speech impaired adults among doctors' adult patients would be 0.5 per cent. The average general practitioner in the sample, saw approximately 552 adult patients per month (Table 14). This means that about 3-4 of these patients would have definable speech/language disorders. On the basis of the assumption that these 11 doctors were representative of the 100 working in the Christchurch area, it would appear that about 300 adult patients require the services of a speech/language therapist, per calendar month. On the basis of the survey data, 100 of the 300 speech impaired persons seen per month would be the result of CVA or accidents, while the remaining two

thirds would be equally divided between stutterers and 'others'. Perhaps 20 per cent of the CVA and accident cases would be new cases, while the remaining 80 per cent would be patients seen for the second or subsequent visits. These 20 new CVA cases per month give an annual total of 240. According to Quirk (1972), 1 therapist to 20 CVA cases is a reasonable number, therefore if the average case lasts for 6 months one therapist can deal with 40 per year. The total number of therapists required to deal with general practitioners' CVA patients would be six. Since the 100 stutterers were predominantly males, and apparently adult males do not visit a general practitioner very often and most commonly only for one or two visits, the relative frequency of new cases per month is likely to be higher than with CVA/accident patients. Consequently, if the percentage of new cases is about 40 per cent per month, this would mean that there are 40 new cases of stuttering per month or 480 per year, for one year anyway. Again, with an average case duration of 6 months and 1 therapist per 100 stutterers, one therapist could deal with 200 stutterers per year. This gives a total of 2½ therapists needed to work with this population. However, as with Study 1, this is not a constantly renewing population like CVA/accident cases, and intensive therapy for some years may reduce the number of stutterers in the population, and staffing would need to adjust to this reduced need for service. The remaining third of speech impaired patients seen by practitioners would perhaps require 1½ more therapists. Thus the current need for speech/language therapists to work in the context of the community, perhaps in medical centres, is 10.

The characteristics of the speech impaired population in contact with general practitioners were as follows: more males than females; highest frequency of disorders occurred between the ages of 50-69 years; more Lower SES persons than Upper SES persons; and the majority of the speech impaired patients had either mild or moderate disorders. The most interesting finding was that 37 per cent of the speech impaired group had stutters.

The ENT specialist screened 304 patients, and 20 (6.6%) of them had problems with their voice or speech due to pathology. This higher incidence is almost certainly a function of the ENT specialist's specialized work. If it is assumed that the other two ENT specialists resident in Christchurch would encounter similar numbers of speech impaired adults, it would appear that one speech/language therapist could be employed to deal exclusively with problems associated with the voice.

Study 3 examined the clients of four social service agencies (N = 446) and found that 2.5 per cent had some degree of speech/language impairment. It is not possible to calculate the total need with this population because of the lack of definitive figures with regard to the numbers of persons seeking help from social agencies. In Population B, Study 3, the incidence rate of speech/language disorders for 46 geriatrics was 36.9 per cent. This figure is somewhat higher than that found in other studies, for example Quirk (1972) reported between 6-12 per cent, while in the United States 20 per cent was the figure for an equivalent age group, although higher incidence was given for a younger age group (Table 28). Since the sample in this investigation

was relatively small, it seems appropriate to calculate the frequency of speech impairment among geriatric persons using the middle figure obtained in the American survey (20 per cent). In Christchurch, approximately 2,500 geriatrics are resident in similar homes and hospitals, 20 per cent of this population gives a total of 500 speech impaired geriatrics. The Quirk Report (1972) recommends a case load of 60 geriatrics to 1 therapist and allowing for a six month period of treatment per patient, each therapist could treat 120 geriatrics per year. Therefore the total number of therapists required for this population is 4.

In a sample of 25 male prisoners, 12 per cent were found to have speech/language disorders.

Study 4 focussed upon adults in the community, both in a working and recreational context. In September 1977 a total of 379 adults were screened at a suburban community centre and 1.6 per cent reported that they had either major or minor speech/language disorders at the time of the survey. While fewer males use the community centre, proportionately more males were found to have speech impairment. Two thirds of the speech impaired group were classified as stutterers, while the problem for the remaining third resulted from cerebral vascular accidents. The speech impaired group were all within the age range 35-45 years and all had disorders which were judged to be mild.

In the second phase of Study 4, a total of 391 factory staff were screened for speech/language disorders in October 1977. Of this group 5.2 per cent were found to have speech impairment, the majority of which were stutterers. Phase 3 of Study 4 was concerned with responses to an advertisement

in the daily newspaper. A total of six adults replied to the advertisement. Of the six who responded, four were stutterers and the remaining two had cleft palates. In summary, the results from Study 4 suggest that stuttering is the most common speech disorder in the general community, and to date their needs are not catered for by speech therapists.

A summary of the distribution of the four types of disorders among the nine sub-populations surveyed for speech/language disorders is presented in Table 61. In comparison to overseas reports (NINDS, 1970; Perkins, 1977; Quirk, 1972), the distribution of types of disorders is slightly different. In this investigation the proportion of stutterers is higher than voice disorders, whereas in general the distribution is usually similar (between 5-15 per cent of the speech impaired population). This may be due to under reporting of voice disorders in this series. However, it seems clear that the incidence of stuttering among the general population is at least equivalent to that reported in the literature (i.e. approximately 1 per cent). In Christchurch at the time of the study, there was only one facility available for adult stutterers, and Study 5 examined the clients who were using or who had used the services provided, so that some descriptive data about the characteristics of the clients and their perceived needs would be recorded. This information should be of some use when planning future services for stutterers.

The client who attended the Stutterers' Clinic was usually male (ratio 5:1), under the age of 27 years, and more likely to be in the middle to Upper SES levels than

Table 61

Distribution of the Types of Disorders among the nine sub-populations surveyed for speech/language disorders in 1977.

Sub-population Source	Types of Disorders Speech	Language	Voice	Rhythm	Total
Adult patients in 3 public hospitals	40	54	5	10	109
Adult patients who consulted 11 general practitioners	11	5	1	10	27
Adult patients who consulted an ENT specialists	4	-	16	-	20
Clients from 4 social agencies	2	9	-	-	11
Residents in a geriatric home	2	15	-	-	17
Male prisoners	1	4	1	1	7
Adult participation of a suburban community centre	1	1	-	4	4
Employees in a clothing factory	3	-	-	17	20
Respondents to a newspaper advertisement	2	-	-	4	6
Totals	66 (9.6)	88(39.4)	23(10.3)	46(20.6)	223

* Entries in parentheses are percentages based on the total number of speech impaired adults in the nine subpopulations (N = 223).

lower SES. The effects of a stutter on the individual seemed to be variable, with a slightly higher proportion of lower to middle SES stutterers believing that their stutter had a negative effect upon both their career choice and their social life than upper SES stutterers. Although 68.4 per cent of the stutters had received some very limited therapy during their childhood, they did not believe that it had been notably successful. This is understandable because the therapy was generally only once a week and of short duration, with very little follow up work. Current information about stutterers (Andrews and Harris, 1971) suggests that daily therapy given for a short period is more effective than weekly therapy over a long period, provided the client is given the opportunity for follow-up sessions when the need arises. Therefore it is of interest to find that almost three quarters of the stutterers believed that the treatment they had received as adults at the Teachers' College Clinic had been worthwhile. However, the stutterers reported that they would like to see the present clinic facilities expanded so that more intensive therapy and follow-up programmes could be utilized. In general it was felt that there should be more publicity about speech problems so that the general public would be able to understand their problems and consequently behave in more appropriate ways towards speech impaired persons.

A summary of the estimated 'need' for speech/language therapists to work with the speech impaired population resident in public hospitals, geriatric homes and the general public in metropolitan Christchurch is presented in Table 62. The estimates were based on the incidence of

Table 62

Estimated need for speech/language therapists to work with adults in public hospitals, in the community and with geriatric residents in nursing homes and hospitals in metropolitan Christchurch.

Location	Estimated population	% needing help	Number of cases per year	Estimated number of speech therapists required
Public hospital patients	1,000	10%	CVA 490[a] others 490*	7½[a] 2½[a]
100 General practitioners	55,200	0.5%	CVA 240 stutters 480 others 100	6[b] 2½ 1½
Geriatric patients resident in homes/ hospitals	2,500	20%	500	4[b]

N = 24

* ENT specialist's patients requiring speech/language therapy would be in this category.

[a] Estimate not on present staffing ratios (if present staffing ratios are used, the number of therapists required would be approximately 20).

[b] The estimates are based on Quirk's (1972) recommendations.

disorders in these sub-populations on an annual basis. While it would appear from these results that 24 speech language therapists could be employed to cater for the speech/language needs of adults resident in metropolitan Christchurch, it must be remembered that this is the current need and that as the positive effects of an effective service are sustained the incidence of some types of disorders (e.g. stuttering) should reduce. Consequently the need for speech/language therapists would need to be regularly monitored so that the needs of the speech impaired and the provision of services are balanced.

LIMITATIONS AND CONCLUSIONS

A variety of methodological problems precluded definitive interpretation of the findings of this series of studies, and the exploratory nature of the investigation necessitated the use of a variety of screening techniques most of which had shortcomings. The information obtained from the present investigation must therefore be considered in this light.

In Study 1 the use of trained observers and a structured screening format should have strengthened the reliability of the findings. Moreover, it was possible to compare the findings for June 1977 with the actual number and type of referrals to the speech/language therapists for the preceding twelve months so that any obvious differences in the data would become apparent. The first difference was the actual numerical difference during one calender month (June 1977). Trained observers had screened every available

patient and judged that 109 adult patients were in 'need' of the services of a speech/language therapist, and 10 of these persons were stutterers. While for the previous twelve months medical personnel had referred only 124 adult patients to the speech/language clinic, of these, three stutterers had been referred from outside the hospital patient population and 38 were Voice cases who had been referred by the ENT specialist. A number of these cases were out-patients from the Head/Neck Clinic. Since there is no reason to suspect that June 1977 was in any way atypical regarding patient population, it seems probable that not all the speech impaired patients in H1, H2 and H3 were referred to the speech/language clinic between June 1976 and May 1977. The reasons for this could be that doctors or nurses failed to recognise speech/language impairment in their hospitalized patients and/or regarded the problem as not their concern, for example a stutter. Finally, perhaps they were unaware that an appropriate and effective service was available to assist such speech impaired patients. It seems unlikely that there were few speech impaired adults in hospital during the previous twelve months, because the 10 per cent found in this study is slightly less than that found by Welch (1977) in an Auckland public hospital. In summary, it would appear that approximately 10 per cent of the hospital patients in the three public hospitals in Christchurch would benefit from a referral to a speech/language therapist, but because of the factors suggested (or some unknown variable), only a small proportion of them are actually referred for assessment and/or treatment.

The second difference in the two sets of data (June

Survey and Referral Group) is the distribution of the types of disorders (Tables 6 and 7). Clearly there are differences between the two groups with regard to the proportions of speech impaired persons with Voice and Rhythm disorders, which require some comment. During the twelve month period the speech/language clinic treated 38 adult patients (30 per cent of the speech impaired group) for Voice disorders. Available research findings indicate that voice disorders usually comprise between 5-15 per cent of the speech impaired population (Milisen, 1971). It is noticeable that the Referral group showed double that percentage. This difference suggests that other types of disorders were probably under-represented. In this connection it is also noticeable that, while approximately one per cent of the total adult patient population in the surveyed hospitals were judged to have stutters in June 1977 (a finding which is consistent with overseas reports - Milisen, 1971; NINDS, 1970; Perkins, 1977, 1978), only three adults with stutters were referred to the hospital speech language therapists between June 1976 - May 1977 (Table 7). It would thus appear that patients with stutters are rarely referred to the speech/language clinic at the hospital; possibly because a stutter is not usually associated with a medical problem and therefore not viewed as of concern to medical personnel.

From the information obtained in Study 1, it seems likely that the ten per cent incident rate for speech/language impairment obtained in the June 1977 Survey is a reasonably accurate estimate of 'need' for services within the adult patient population. The discrepancies between the survey data and the referral data seem to suggest that only

a small proportion of the speech impaired patients is ever referred to the speech/language therapist.

A variety of methodological problems were also encountered in Study 2, and the results thus require cautious interpretation. The importance of the role of the medical profession with regard to the provision of speech/language services for adults derives from two considerations. Firstly, many of the speech/language disorders which are evident in adulthood are typically associated with particular medical conditions. Secondly (because of the current situation with regard to knowledge about speech/language impairment and services among the general public), doctors because of their contacts with the community are in a key position with regard to both the recognition and subsequent referral of patients with definable speech/language disorders to a qualified speech/language therapist. Even though doctors are not usually trained in the diagnosis of speech impairment (and thus would be less likely to label minor deviations as defective), it was considered that their judgements about the effectiveness of their patients' communication skills would be adequate in the social sense. While the doctors who were contacted in Study 2 seemed both willing and interested to participate in the investigation, in fact only 11 of those included in the study could be said to have 'actively participated' (Tables 16 and 17). The somewhat low rate of participation by the doctors was almost certainly due in part to their inaccessibility because of the considerable demands on their time. For example, it was possible to brief only one doctor in each practice about the requirements

of the survey. A second factor (mentioned by most doctors) is the fact that doctors are very frequently requested to participate in research projects (both from the Health Department and other sources) with high levels of encroachment on their time and attendant ethical difficulties in terms of availability to patients - given that their first responsibility must be to the patient's health. Finally, the case load of doctors needs to be considered in this connection; it is not unusual for a general practitioner to see up to seventy-five patients per day. It is thus understandable that the extent of their participation in this study was limited.

A further problem with Study 2 was that the distribution of speech/language disorders within the speech impaired population was different from that reported by other surveys. For example, 37 per cent of the speech impaired group had stutters, which far exceeds the 5-15 per cent found in overseas studies (Milisen, 1971; Perkins, 1977, 1978). The reasons for this can be speculated about, perhaps doctors recognise a stutter more easily than other types of disorders.

Population A of Study 3 was subject to some of the same difficulties which were evident in Study 2 (viz., the fallibility of untrained observers and the ethical considerations) but it seems doubtful that the exigencies of time were relevant in this sub-population. The total number of clients consulting the four social agencies, who had definable speech/language disorders (excluding the developmentally based problems and simple articulation disorders), was 5 (1.12%) out of 446. There were no Voice or Rhythm

cases, which seems unusual, but this may be due to observer inexperience. It was expected that there would be about four of each type of these disorders (i.e. 1 per cent of the population). It would appear that 1.12 per cent is a conservative estimate of the incidence of speech/language disorders in this population.

In Population B, Study 3, attempts were made to minimize errors. The 46 geriatric residents were screened by means of a structured interview by one trained observer. The reported incidence rate of speech/language impairment for geriatrics is generally between 6-30 per cent (American Speech and Hearing Association, 1977; NINDS, 1970; Quirk, 1972) but this particular geriatric population had an incidence rate of 36.9 per cent. This rather high rate may be due to the fact that the population screened was somewhat older than usual ($\bar{X}$ = 87 years, range 72-97 years). A further study, sampling geriatric populations in a number of different locations, would be required before any definitive statement about the incidence of speech/language impairment in geriatrics in Christchurch could be made with confidence. At the same time it is certain that a considerable number of geriatrics are in 'need' of speech/language services.

In Population C of Study 3, an untrained (although well briefed) observeer screened a group of male prisoners who had been recently sentenced to a particular prison. The screening procedure was simply included in the routine assessment procedures employed with all new prisoners. Omitting developmental problems, the incidence rate was 12 per cent, which is somewhat higher than the reported

frequency recorded overseas for the adult population (between 4-10 per cent) (Milisen, 1971). While the sample was small and may have been atypical, the results suggest that a more detailed investigation with prison populations would be of interest, as it appears that a considerable number of prison inmates may require the services of a speech/language therapist.

In Study 4, Population A, the validity of the findings was dependent upon the honesty and awareness of the community centre participants. It was possible to some extent to check the validity of the participants' responses by calculating the proportion of the sample who admitted to having speech problems in childhood and comparing the results with reported proportions in overseas studies. A total of 3.1 per cent of the screened population admitted to having a speech problem during childhood. This figure is on the conservative side in comparison with overseas reports by Milisen (1971) of between 4-15 per cent of all children and more males than females affected. However, in this study more females claimed they had problems with speech in childhood than males. In light of these factors, the results from this section of the study should probably be regarded as a conservative estimate of speech impairment in adults.

In Population B of Study 4, the use of trained observers to distribute the questionnaire and personally interact and listen to the subjects, probably strengthened the reliability of the results in this section of the study. The results suggest that the subjects responded truthfully to the questions because the overall reported frequency of

childhood problems with speech, and the male/female ratio, were similar to those reported overseas (Milisen, 1971). Consequently, the current incidence rate of 5.2 per cent appears to be a reasonable estimate of speech impairment in the factory sub-population.

The objective of the newspaper advertisement in Study 4 was to provide a check on the reliability of the findings of the whole survey by comparing the frequencies and distribution of disorders among the advertisement respondents with those found in the other sub-populations screened. It is acknowledged that there are inherent problems with such an indirect approach, because many persons with speech/language disorders may neither read the newspaper nor be interested in writing a reply. In fact this section of the study was of little value.

IMPLICATIONS FOR FUTURE SPEECH/LANGUAGE THERAPY SERVICES FOR ADULTS IN CHRISTCHURCH

The present findings should facilitate future planning of speech/language therapy services for adults in Christchurch. In essence, several suggestions arise from the present series of studies. Firstly, in spite of methodological problems, it appears that approximately 2 per cent of the general population sampled had 'need' of the services of a speech/language therapist. It should be noted that this figure is lower than overseas estimates of incidence, which vary from 4-10 per cent and sometimes extend to 20 per cent (Milisen, 1971; NINDS, 1970). Incidence rates vary considerably depending upon the sub-

population surveyed; for example, it is higher among hospital patients and geriatrics resident in homes and hospitals. Not every speech impaired adult may wish to receive therapy or in fact benefit from it. However, such a service should be available for those speech impaired persons who do require it. Currently, as far as can be ascertained, there are no speech/language therapists working with adult clients in private practice in Christchurch, and at the time of writing the Stutterers' Clinic had been in recess for over twelve months. Therefore, the only speech/language therapy service available to speech impaired adults in Christchurch was provided in the three public hospitals which were surveyed. As discussed in an earlier chapter, only about 1 per cent of the speech impaired adult patients in these three hospitals were treated by the hospital therapists, partly because they are not referred and partly because of the lack of a suitable service.

While a further seven speech/language therapists could gradually be absorbed into the hospital service to cater for the 9 per cent who are not being treated at present. Concurrently, it will be necessary to provide information about speech/language disorders and the available service to all medical personnel in the hospital system to ensure that all the speech impaired adults are referred to the speech/language therapists. At the current rate of referral, to increase the number of therapists without the public relations effort would not benefit speech impaired adults in 'need' of services.

Medical practitioners, both within the hospital system and in general practice, need to be able to recognise

all the four types of disorders and be assured of the benefits of therapy for their patients, so that the speech impaired adults will be referred to speech/language therapists. The results from Studies 1 and 2, and to some extent Study 5, seem to suggest that not all doctors are clear about the types of disorders nor about the benefits of therapy. Secondly, it seems apparent that availability of services affects the rates of referral. For example, the ENT specialist's patients with Voice disorders were not always referred (Tables 7 and 14) even though the specialist had patients who required therapy, possibly because he was aware of the limitations of the present service (i.e. no staff for intensive therapy and follow-up work). While Studies 2 and 5 indicate that some doctors in general practice are asked for advice from adults with stutters, they rarely refer them to a speech/language therapist for treatment. Secondly, some doctors seemed to feel that speech/language therapy would not be beneficial to some of their patients who had suffered a cerebral vascular accident. It seems that such decisions would be better made after a speech/language therapist had assessed the patient. Perhaps one way of ensuring better understanding and co-operation between doctors and speech therapist would be to locate at least one speech/language therapist in a medical centre in each geographical quarter of Christchurch (North, South, East and West). These therapists could treat the speech impaired adults in the community, including those who have had cerebral vascular accidents and been discharged from hospital. The hospital based therapists could initiate the assessment and first stages of

therapy, and the community based therapist could continue rehabilitation procedures when the patient was discharged. Such a procedure would be in line with current trends in New Zealand to return medical and social services back into the local community rather than expand present services in institutions. The closer contact that a speech therapist could have with other professionals within the medical centre e.g. community nurse, social worker and occupational therapist (as well as doctors), could do much to improve both the attitudes and services to the speech impaired population. The community based speech/language therapist could also provide intensive courses for stutterers as well as an itinerant service for geriatric adults in 'need' of treatment in the area.

The criticism implied by the subjects in Study 5, that knowledge about speech impairment in adults is not being promoted by speech/language therapists, appears to be both valid and yet understandable, in view of the very limited interaction with speech impaired adults which the majority of speech/language therapists in Christchurch experience. Information seems to be 'needed' also by the general public so that they can begin to understand the problems of speech impaired persons and realize that such disorders are not respectful of age, sex or social position. Such knowledge should assist speech impaired persons to be better integrated into the general community, instead of feeling somewhat isolated (as so often appears to be the case). Finally, speech impaired adults themselves 'need' information about speech problems and the kinds of services available to assist them (e.g. treatment facilities, costs,

clubs, etc.). In summary, good public relations and adequate information seem essential requisites for any future planning so that the strategy of simply providing more therapists in isolation is avoided.

In conclusion, the present series of studies has shed some light on the incidence and problems of speech impaired adults in Christchurch, and some tentative suggestions about the future services for such persons have been made. The following points seem evident: many speech impaired adults in the Christchurch metropolitan area receive no therapy while others receive limited treatment; speech/language therapists should disseminate knowledge about types of disorders and services available to other professions, especially doctors, speech impaired adults and the general public; and finally the future location of speech/language therapists should be carefully considered. While an increase in the number of speech/language therapists employed in the hospital service appears to be warranted, it is within the context of the general community (e.g. medical centres) that the need is perhaps the greatest (i.e. service for stutterers and discharged hospital patients).

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APPENDIX A

Speech/Language Inventory

Christian name:	Date:
Surname (initial only):	Sex:
Occupation:	Age:
Date (approx.) of onset of Speech/Language disorder:	
Medical cause of Speech/Lang. disorder:	

1. SPEECH:

Slow/slurred	
Distorted consonants	

2. LANGUAGE:

Limited output	
Comprehension Problems	
Word finding difficulty	
Unintelligible	

3. VOICE:

Too loud	
Too soft	
Pitch too high/low	
Hoarse/harsh quality	
Transient loss of voice	
Permanent loss of voice	
Excessively nasal	
Reduced nasality	

4. RHYTHM:

Repeats initial sounds	
Repeats words	
Hesitates before speaking	
Prolongs speech sounds	
Cessation of sound	

DEGREE OF IMPAIRMENT

Mild	
Moderate	
Severe	

RECEIVED SPEECH THERAPY

YES FOR		NO BECAUSE	
several weeks		Not referred	
several mths		Not available	
Several years		No transport	
Patient found it helpful		Not well enough	
YES	NO	Other	

APPENDIX A: (2) INTERVIEW FORMAT AND TEST SENTENCE

(I) INTRODUCTION: Good morning/afternoon, my name is ....., and I work ..... During the month of June we are undertaking a survey to find out the extent of speech and language impairment (and the need for appropriate speech therapy services) among adults in the Christchurch area. Are you willing to participate? All you have to do is to repeat (3) sentences after me and answer one or two simple questions.

(2) Administer (3) sentences. On card.

(a) Limes are sour.

(b) The barn swallow captured a plump worm.

(c) The phantom soared across the foggy heath.

On the basis of this short test, proceed only if the patient has a definable speech/language disorder. Use the data sheet provided to record the information:

(a) What is your birth date (age).

(b) What job/occupation do you normally engage in?

(c) Have you ever received speech therapy etc.

From the speech sample obtained from these questions, the patient is allocated a severity category e.g. mild, moderate or severe. The assessor also records whether the patient would normally be selected for treatment according to the accepted guidelines for selection and treatment.

(4) Thank the person for their co-operation and record by means of a tick in the appropriate space on the Ward data sheet before moving on to the next patient.

PLEASE ENDEAVOUR TO FOLLOW THE ABOVE FORMAT FOR PURPOSES OF RELIABILITY

Many thanks for your assistance.

Education Department

University of Canterbury Christchurch 1 New Zealand

APPENDIX B: (1) COPY OF BRIEF FOLLOW-UP QUESTIONNAIRE

Dear Dr. ....

Thank you very much for participating in the June Survey for Speech/Language Disorders among Christchurch adults. We realise that the task we required was difficult, nevertheless, we are surprised at the low incidence reported by General Practitioners and would appreciate your opinion as to the reasons why the returns were so low. It would be most helpful if you would answer the following questions and return them to me in the envelope provided. The confidentiality of your replies is assured.

(1) General Practitioners concentrate on the primary health care of their patients and forget to listen for Speech/Language Disorders.

most probably	
possibly	
most unlikely	

Please tick the appropriate boxes

(2) General Practitioners are most concerned with the primary health problems of their patients and fail to recognise a Speech/Language problem.

most probably	
possibly	
most unlikely	

(3) Very few patients seen by a General Practitioner ever have a Speech/Language Disorder.

most probably	
possibly	
most unlikely	

(4) Please estimate the average number of patients who consult you in any one calendar month.

_____

(5) Please estimate the average number of patients who consult you in any calendar month who have a Speech/Language Disorder.

_____

(6) Any comment you would like to make about this study.

.....

.....

.....

Thank you very much for your co-operation in this matter. You will receive a copy of the results of this study in due course.

Yours sincerely,

Appendix B Table

Distribution of participating Medical Centres and doctors, with estimates of average number of consultations for individual doctors during one calendar month from both the Health Department and individual doctors.

Medical Centre	Doctor	Estimates of average number of consultations per calendar month - inclusive and adults only			
		Health Dept - inclusive	Health Dept -adults only*	Individual doctors inclusive	Individual doctors adults only
A	1	1745	1327	1700	1292
	2	1395	1060	1000	760
B	3	1130	859	750	570
	4	1208	918	800	608
	5	1123	853	1000	760
C	6	697	530	600	456
	7	753	527	900	684
	8	581	442	500	380
	9[a]	158	120	60	46
D	10	1322	1005	1000	760
	11	1216	924	900	684
	12	1359	1033	1000	760
E	13	862	655	500	380
	14	1105	840	1000	760
	15	568	432	700	532
	16	372	283	200	112
F	17	1054	801	800	608
	18	945	718	900	684
	19	1456	1107	700	532
	20	1068	812	800	608
	21	910	692	800	608
G	22	850	646	550	418
	23	757	575	500	380
	24	945	718	1120	851
	25	836	653	1000	760
	26	671	510	550	418
H	27	-[b]	-	-	450
	28	-	-	-	600
	29	-	-	-	450
	30	-	-	-	300
	31	920	699	400	304

[a] Part-time.

[b] No figures available.

* Adjusted by subtracting 24% for children. N = 17,555

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APPENDIX C: (1) QUESTIONNAIRE FOR THE COMMUNITY CENTRE

SPEECH AND LANGUAGE DISORDER SURVEY (1977)

We are currently undertaking a survey of speech/language problems among adults in Christchurch. We believe that this information will provide the kind of knowledge that is essential for the development of adequate speech therapy services for the area. We hope that you will appreciate the importance of this survey and will help us by answering the following questions:

Name:	Day of Class:
Group/Class:	Time of Class:
	Room No:

HAVE YOU EVER HAD A SPEECH PROBLEM?

(Please tick)

I have never had any speech problem
I used to have a minor speech problem
I used to have a very serious speech problem
I now have a minor speech problem
I now have a very serious speech problem

MANY THANKS FOR YOUR COOPERATION

G.A. Nuthall
Ph. 792-260 Ext. 8651

University of Canterbury Christchurch 1 New Zealand

APPENDIX C: (2) QUESTIONNAIRE FOR FACTORY PARTICIPANTS

SPEECH AND LANGUAGE DISORDER SURVEY (1977)

We are currently undertaking a survey of speech/language problems among adults in Christchurch. We believe that this information will provide the kind of knowledge that is essential for the development of adequate speech therapy services for the area. We hope that you will appreciate the importance of this survey and will help us by answering the following questions:

Name:	Place of Work:
Occupation:	Phone:

HAVE YOU EVER HAD A SPEECH PROBLEM?

(Please tick)

I have never had any speech problem	
I used to have a minor speech problem	
I used to have a very serious speech problem	
I now have a minor speech problem	
I now have a very serious speech problem	

MANY THANKS FOR YOUR COOPERATION

G.A. Nuthall
Ph. 792-260 Ext. 8651

APPENDIX C: (3) COPY OF THE NEWSPAPER ADVERTISEMENT

HAVE YOU EVER HAD A SPEECH PROBLEM?

At present there is very little help available for adults with speech problems. We are carrying out a research project to find out how many people might require this kind of help. This information is needed before adequate services can be planned.

If you have, or have had, any speech problem, could you please send the following information: age, sex, occupation, type of speech difficulty, when or how long you have had it, to:

Mrs Sonia Heeney,
Education Department
University of Canterbury,
Private Bag,
Christchurch.

All replies will be kept strictly confidential.

Education Department

University of Canterbury Christchurch 1 New Zealand

APPENDIX D: STUTTERER'S QUESTIONNAIRE

SPEECH AND LANGUAGE DISORDER SURVEY (1977)

We are currently undertaking a survey of speech and language impairment among adults in Christchurch. We believe that this information will provide the kind of knowledge that is essential for the development of adequate speech therapy services for the area. We hope that you will appreciate the importance of this survey and will help us by filling in the following questionnaire. Please do not record your name, the confidentiality of your answers is assured.

1. Please fill in the following details.

Age:	Occupation:
Sex:	Type of speech problem:

2. Please tick the appropriate box.

How did you find out about this clinic?

Advertisement in newspaper	
From a friend	
From your doctor	
Other (state)	

3. Date of first session at this clinic _____

4. Number of sessions attended including this one _____

5. How many more sessions do you think you will require?

_____/Uncertain

6. Please ring all the appropriate words.

Since attending the clinic, do you think your speech has improved with:

immediate family
relations
therapist
friends
strangers
workmates

no one
Others (describe)_____
_____

7. Have any of the following persons commented upon your improvement?

immediate family
relations
therapist
friends
strangers
workmates
no one
Others (Describe) _____

8. How long have you had a problem with your speech? _____yrs_____mths

9. Were you ever referred to a speech therapist during your school days?

Yes / No

If your answer to question (9) was yes, please answer the following (4) questions, otherwise omit.

10. Did you receive speech therapy in a speech clinic

Several times per week	
Once a week	
Once a fortnight	
Other (please state)	

11. How long did you receive regular speech therapy?

Several weeks	
Several months	
One year	
Several years	
Other	

12. Did you receive speech therapy

On an individual basis	
As part of a group	
Combination of both	

13. How old were you when you started to get speech therapy?_____

14. Have you ever consulted any of the following about your speech problem?

Minister of religion	
family doctor	
psychologist	
colour therapist	
hypnotist	
psychiatrist	
Other (state)	

If you have consulted any of the above persons about your speech problem, please answer this question, otherwise omit.

15. How many consultations? _____

Over what time period? _____yrs_____mths

Describe the kind of help the person gave you_____

_____

_____

16. In 1 or 2 sentences briefly describe your speech problem _____

_____

_____

_____

17. In what ways does it affect your social life?_____

_____

_____

18. In what ways does it affect your ambitions/career?_____

_____

_____

19. What sort of facilities/services would you like to see developed in Christchurch to help people with speech problems?

_____

_____

_____

20. Do you feel people should pay for help with their speech problems?

Yes / No

MANY THANKS FOR YOUR ASSISTANCE
& COOPERATION, IT SHOULD BE
OF GREAT HELP TO OTHERS

University of Canterbury Christchurch 1 New Zealand

APPENDIX E: (1) LETTER TO OVERSEAS SPEECH PATHOLOGISTS

Dear

We are currently undertaking a systematic survey of the extent of speech and language impairment (and the need for appropriate speech therapy services) among adults in the Christchurch area. After an extensive survey, we have not been able to locate any studies of this nature in the available research literature. However, we feel sure that such studies must have been undertaken and we would be most grateful if you could advise us of any studies in this area that have come to your attention (either published, unpublished, or in progress).

As well as collecting data on 'perceived need' for speech therapy services with adults in Christchurch, we would like to find out about the types of facilities for adults that are available in other English-speaking countries. We would therefore appreciate information on any therapy services which your department/unit might be providing for speech impaired adults.

We look forward to hearing from you soon.

Yours sincerely,

Sonia Heeney
Graham Nuthall
Keri Wilton
Department of Education

APPENDIX E

(2) LIST OF PERSONS WHO REPLIED TO THE CIRCULARIZED LETTER

The following individuals attempted to provide descriptions about the types of services available to speech impaired adults in the location they were employed. No one was able to provide information with regard to surveys among adults to ascertain incidence and prevalence rates.

Australia

Mrs C. Fraser, for Mrs Bauman, New South Wales

Mrs Jan Howell, Western Australia

Mr Neil O'Halloran, Victoria

Mrs Kate Straford, South Australia

Mrs Elizabeth C. Usher, Queensland

P.A. Baldock, Speech Therapist, Princess Alexandra Hospital

Helen King, Speech Pathologist, Toowoomba Hospitals Board

Claire Pringle and Robin Wilson, Speech Therapists, Townsville

Dr Ian Waugh and Gail Vardy, Community Health Services Centre, Inala

Noela M. Zuk, Senior Speech Pathologist, Rehabilitation Centre, Brisbane

Canada

Dr Einer Boberg, University of Alberta, Edmonton

Elaine Clemons, Vancouver

Dr Joyce D. Edwards, Dalhousie University, Halifax, N.S.

Miss Lois Hunter, Charge Speech Pathologist, University of Saskatchewan

Dr Daniel Ling, McGill University, Montreal

United Kingdom

J.A. Doran, Department of Health and Social Security, London

H.P. Fishman, The College of Speech Therapists, London

Pauline Griffiths, National Hospital's College of Speech Sciences, London

Lena Rustin, Area Speech Therapist, Camden and Islington Area Health Authority (Teaching), London

Ann Wallace, Jordanhill, College of Education, Glasgow

United States

Dr Brutten per Dr J.O. Anderson, University of Carbondale, Illinois

Dr I.P. Brackett, University of Carbondale, Illinois

David Broad, Speech Communications Research Laboratory, California

Professor C.B. Cazden, Harvard University, Massachusetts

Dr Jay Christensen, Director & Professor of Speech Pathology and Audiology, University of Oregon, Oregon

Dr Don Mower, Arizona State University, Tempe, Arizona

Dr William H. Perkins, per Mary A. Gerlitz, University of Southern California, Los Angeles

Dr Kenneth Perrin, (ASHA) Director of Education and Scientific Program, Rockville, Maryland

Joanne H. Schwartz, University of Maryland

Dr Richard Silverman, Teachers' College Research Laboratories Speech and Hearing Clinics, St Louis

John C. Snidecor, University of California, Santa Barbara

Dr Merle Stevens, Director of Outpatient Speech and Language Clinics, Indiana University, Bloomington, Indiana

Dr Daniel H. Zwitman, Assistant Professor Head/Neck Surgery, Director Speech Clinic, University of California, Los Angeles.

(3) LIST OF AVAILABLE SERVICES FOR ADULTS WITH DISORDERS OF SPEECH, VOICE, OR LANGUAGE, IN THE STATE OF QUEENSLAND, AUSTRALIA.

Geriatric Unit, Princess Alexandra Hospital, Ipswich Rd, South Brisbane.

Mater Misericordiae Hospital, Annerley Rd, South Brisbane.

Veteran's Administration Hospital, Greenslopes, Brisbane.

Veteran's Administration Hospital, Windsor, Brisbane.

Royal Brisbane Hospital, Herston, Brisbane.

Social Services Rehabilitation Centre, Taringa, Brisbane.

Community Health Centre, Inala, Brisbane.

Community Health Centre, Wynnum, Brisbane.

Multiple Sclerosis Association, Dutton Park, Brisbane

Department of Speech and Hearing, University of Queensland, St. Lucia.

Hopetoun Day Hospital, Corinda, Brisbane.

Townsville Base Hospital, Townsville, North Queensland.

Community Health Centre, Townsville, North Queensland.

Rockhampton Base Hospital, Rockhampton, Central Queensland.

Toowoomba Base Hospital, Toowoomba, Darling Downs, Queensland.